WORK BEHAVIOR TYPES, JOB SATISFACTION, AND ATTRITION IN MEDICAL TECHNOLOGY

BY

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WORK BEHAVIOR TYPES, JOB SATISFACTION, AND
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Job dissatisfaction and attrition are major concerns in medical technology. The purpose of this study was to identify work behavior types of medical technologists and to determine their relationship to job satisfaction and attrition. Information generated by this work could be useful in counseling and matching the right person to the right job.

Ninety-two bench-level technologists employed in hospital and nonhospital laboratories and 19 former technologists employed in a variety of occupations comprised the sample. The Job Descriptive Index measured job satisfaction. The Marcus Paul Placement Profile indicated work behavior type. A questionnaire provided demographic data.

The majority of technologists were females (78.3%) with more than 5 years experience. One third expected to leave medical technology and 22.8% expected to leave within the coming year. Most received

inadequate career counseling prior to choosing medical technology; three fourths indicated information about work behavior types would have helped in career decision making.

Technologists were predominantly Producers and Concentrators. These types occurred more frequently than in the general population. Work behavior types among former technologists approximated those of the general population. Findings are consistent with earlier research on personality types among medical technologists.

Results indicate that work behavior type relates to overall and specific aspects of job satisfaction. Inducers indicate higher levels of overall job satisfaction and satisfaction with promotions than other types. The relationship between work behavior type and attrition is equivocable. However, Energizers and Inducers leave at higher rates than Producers and Concentrators.

Former technologists are more satisfied with their jobs, work, pay, promotions, and co-workers than practicing technologists in hospital or nonhospital laboratories. No differences exist in overall job satisfaction or specific aspects of it among practicing technologists.

Although the sex of the participant does not affect job satisfaction, sex relates to attrition and may stem from poor salaries received by technologists compared to others with comparable education.

Attrition from medical technology can be predicted from age, sex, years experience, satisfaction with promotions, Producer and Energizer scores. These variables explain 30.4% of the variance in attrition.

CHAPTER I
INTRODUCTION

Work is a central life activity for the majority of adults in modern society--more than just a means for earning a living. According to Terkel (1972), work is

> a search, too, for daily meaning as well as daily bread, for recognition as well as cash, for astonishment rather than torpor; in short, for a sort of life rather than a Monday through Friday sort of dying. Perhaps immortality, too, is part of the quest. (p. xi)

Since the Industrial Revolution, job dissatisfaction, turnover, and poor productivity have been growing problems among American workers. Toeffler (1980) stated that industrialization "drove a giant invisible wedge into our economy, our psyches, and even our sexual selves" (p. 53). Industrialization separated production from consumption and producer from consumer. Mass production brought synchronization, centralization, specialization, standardization, concentration, and maximization. Workers lost control over the processes and outcomes of work. The importance of skill and creativity diminished and workers no longer felt challenged or stimulated.

Industrialization also satisfied workers' lower order needs enabling them to focus on satisfaction inherent in the work itself. Workers demand that work be satisfying, meaningful, and less depersonalized. They expect equity and justice in the work place

and sufficient wages to live comfortably, according to the current standard of living (Yankelovich, 1974). When these demands and expectations clash with the realities of the world of work, disappointment, dissatisfaction, and turnover may follow.

Inadequate career planning and improper placement of people in jobs are central to the problems of job dissatisfaction and turnover. Poor use of human resources often leads to a mismatch between the individual and the job. Effective person/job matching is a major challenge for business, industry, and education today.

This study was designed to provide new insights into the problems of people/job matching in medical technology. The purpose was to investigate the relationship among work behavior types, job satisfaction, and attrition among a selected group of Florida medical technologists.

Background

Since the 1970s, medical technology has been expanding to meet the growing demands of the nation's health care system. Technological advances have created needs for additional technologists to perform the increasing numbers of laboratory tests available to physicians for diagnosis, prevention, and treatment of disease. Population growth, especially for the elderly, greater health awareness by the public, and widespread availability of health insurance have also, indirectly, influenced personnel requirements for medical technology. Employment opportunities will continue to spiral. Projections for the 1980s indicate that the number of medical technology positions will increase

faster than the average of all occupations (U.S. Bureau of Labor Statistics, 1982).

In 1982, approximately 205,000 medical laboratory workers were employed in hospitals, independent laboratories, physicians' offices, clinics, public health agencies, pharmaceutical companies, and research institutions (U.S. Bureau of Labor Statistics, 1982). Many others will be needed to fill new positions and to serve as replacements for those who retire, die, or leave medical technology for other kinds of work.

The literature contains increasing evidence that the numbers of technologists will not be sufficient to fill future vacancies. Jeanne Burson (1981), former president of the American Society for Medical Technology, indicated that medical technology, like nursing, is facing a personnel shortage. She attributed this situation, in part, to insufficient pay for the educational requirements and job responsibilities demanded by the profession. She also stated that medical technologists have experienced an "identity crisis." Many feel they do not receive adequate recognition as health care professionals from the public or from other health care practitioners.

Studies by Hajek and Blumberg (1982), Myers, Bronstein, and Vojir (1982), Koneman (1982), and Irwin (1983) on job dissatisfaction and attrition among medical technologists also agreed with these observations. More than half of the technologists working today indicated they would not be active in medical technology within 5 years.

Schools of medical technology are facing declining enrollments. Some schools have been forced to close or operate with less than full enrollments. Others have accepted less qualified applicants in order

to remain open (French & Elkins, 1982). These are indications that schools of medical technology may not graduate sufficient numbers of technologists to meet the increased demands for these allied health professionals.

The current trends in attrition among medical technologists and the shortage of new graduates could have serious impact on the health care industry. Koneman (1982) noted that future laboratories might be staffed by inexperienced, less qualified individuals. The National Commission for Health Certifying Agencies (cited in Irwin, 1983) also expressed concerns about the effects of technologists' dissatisfaction and attrition on the quality and accuracy of laboratory results.

High turnover not only compromises the quality of patient care; it also raises the cost of that care because the care must be provided by fewer people at higher rates (Price & Mueller, 1981). Karni, Studer, and Carter (1981) found that laboratory personnel were among the most expensive hospital employees to replace. Simpson and LaValle (1983) estimated that turnover costs for a vacated staff technologist position could run as high as $7,458. These costs are eventually passed along to the patient consumer, making health care an expensive commodity.

Attrition also represents a waste of human resources, with psychosocial implications for individuals, organizations, and society. Greenberg (1979) indicated that 80% of the people working today are not matched to the right job. Not surprisingly, a majority of American workers are dissatisfied with their jobs and would not voluntarily choose the same work again if given the opportunity (Special Task Force to the Secretary of H.E.W., 1973).

In a recent study by Irwin (1983), medical technologists expressed the same views.

During the past 20 years, the rising educational level of American workers has increased their expectations and demands for useful, satisfying work. However, the realities of the job may not fulfill these expectations. Furthermore, the capabilities of the employee often do not match the requirements of the job (Jelinik, 1979). Under these conditions, the worker fails to achieve self-actualization, becomes dissatisfied with the job, and sometimes leaves the organization.

Medical technology students are prepared to assume a collaborative role with physicians and become members of the health care team. In addition to being trained to perform tests and report results, they are trained to interpret the significance of those results. However, poor communications and rivalries between technologists and the medical staff preclude technologist involvement in patient care at this higher level. Recent advances in automation have also reduced the technical expertise required to perform tests. Yet employers tend to "overhire" and technologists find themselves in relatively low paying, routine jobs that provide little opportunity for self-actualization, esteem, or upward mobility. The brightest and best recruits may also become the most dissatisfied workers and move on to more challenging fields. Therefore, placement and training decisions must be based on additional factors.

Although organizations claim that human resources are their most important asset, they do little to match an individual's skills, knowledge, interests, aptitudes, or work behavior preferences to available jobs. Jelinik (1979) stated that even the most progressive

organizations lacked expertise in the area of person/job matching. Many use outdated selection and placement methods that include evaluation of past work history, educational background, interviews, and reference checks. Occasionally these subjective techniques may be supplemented by objective, job-related tests (Silver & Berke, 1981).

During the past 10 years, industrial psychologists and other researchers have contributed useful knowledge and methods for a more rational approach to matching people to jobs or students to careers. Recent studies in the personnel selection literature provide a greater understanding of the basic structures and taxonomies of human characteristics. Others have suggested significantly improved methods for measuring the behavioral components of jobs and job performance dimensions (Dunnette & Borman, 1979). McCormick's (1976) task inventory technology has provided a basis for job analysis techniques used to infer the personal attributes important for doing a job. The development of job samples has permitted evaluation of a candidate's proficiency in performing the tasks involved in the job. Job samples have been useful for jobs requiring motor skills and are more valid than other types of tests in reflecting an individual's performance level (Asher & Sciarrino, 1974).

Dunnette and Borman (1979) conceptualized the ideal counseling and placement system of the future: a data bank containing the parameters of available jobs and the attributes of available persons. Standardized task checklists, scorable in terms of behavioral and attribute categories, would be used to derive job parameters. Job candidates or students would use similar checklists to record previous experience, preferences, and estimated capabilities. Scores generated according

to job and attribute categories would be referred to the data bank for job matching. Aptitude tests, job knowledge tests, job samples, and simulations would provide additional data for individual and organizational decision making.

Recent studies by Bauch (1981) and Glenn (1982) indicated that an individual's work patterns or work behavior traits also played an important role in job matching and recommended additional research in this area. The assumption is that effective job matching will maximize use of human resources and decrease job dissatisfaction, poor productivity, and turnover.

As previously discussed, job dissatisfaction and attrition are major concerns in medical technology. In the interest of providing new insights into these problems, this investigator examined the relationships among work behavior type, job satisfaction, and attrition among Florida medical technologists.

Statement of the Problem

The problem of this study was to determine the relationships among work behavior type, job satisfaction, attrition, and demographic variables of medical technologists in Florida. The study was developed to answer the following research questions:

1. What are the work behavior types of medical technologists in Florida as measured by the Marcus Paul Placement Profile?

2. Does a relationship exist between the work behavior type of technologists and overall job satisfaction as measured by the Job Descriptive Index?

3. Does a relationship exist between work behavior types and specific aspects of job satisfaction as determined by the subscales of the Job Descriptive Index?

4. Do participants' work behavior types relate to attrition or the intention to leave medical technology?

5. Do medical technologists working in hospitals differ in overall job satisfaction from those working in nonhospital laboratories or other fields?

6. Do medical technologists working in hospitals differ in specific aspects of job satisfaction from those working in nonhospital laboratories or other fields?

7. Does a relationship exist between the sex of the participant and job satisfaction?

8. Does a relationship exist between the sex of the participant and attrition or the intention to leave medical technology?

9. Can some combination of demographic variables, work behavior type, and job satisfaction predict attrition of Florida medical technologists?

Delimitations and Limitations

This study was delimited by the following factors:

1. The subjects of this study were practicing and former staff medical technologists in Florida holding, at least, a Bachelor of Science degree.

2. Information on work behavior type was confined to that measured by the Marcus Paul Placement Profile.

3. Information about job satisfaction was restricted to the facets measured by the Job Descriptive Index.

The following limitations were also observed in this study:

1. Medical technologists volunteered to participate in this study. There is no assurance they are representative of the population of medical technologists in Florida or medical technologists in general. Therefore, results may not be generalizable to other populations of technologists.

2. The design of the study made it impossible to manipulate the independent variables.

Justification for the Study

Medical technologists are dissatisfied with their jobs and are leaving the profession to work in other areas. Karni et al. (1982) estimated that the overall turnover rate among laboratory personnel in Minneapolis hospitals ranged between 15% and 20%. An estimated 43% of those resignations were avoidable. Investigators have identified many sources of dissatisfaction and attrition and have made many recommendations to remedy the situation. Although these proposals have merit, they have not alleviated the problem. Attrition among medical technologists not only impairs the delivery of health services; it represents a significant threat to the quality and cost of health care. Immediate solutions are required to reduce the attrition rate and reduce personnel shortages in medical technology.

Research indicates that people exhibit a particular pattern of behaviors and qualities in the working situation (Geier, 1979). When individuals have information about their work behavior styles and they are matched to jobs requiring and encouraging those styles, they have a greater opportunity for success and job satisfaction. The right "fit" between employee and job also decreases the likelihood that the employee will become frustrated and quit.

If information were available on the work behavior types of medical technologists who enjoyed their work and intended to remain in the profession, major efforts could be directed toward matching people with these profiles to jobs and educational programs. This study was designed to add to the limited research on work behavior types. Findings may also provide new insights into the problems of job

satisfaction and attrition among medical technologists as these problems relate to people/job matching.

Results of the study may also have implications for career planning, academic advising, and planning effective educational and training programs for medical technologists. Advisors, counselors, students, and employers may use the information as a basis for a more systematic approach to hiring and career selection. Program developers may apply the results in developing instructional strategies that would foster and enhance work behaviors essential for success in medical technology.

Assumptions

This study is based on the following assumptions:

1. Participants answered the surveys honestly and responses accurately reflect their attitudes and preferences.
2. The Marcus Paul Placement Profile is a valid and reliable instrument for measuring work behavior type of medical technologists.
3. The Job Descriptive Index is a valid, reliable measure of job satisfaction.
4. Responses to behavioral intention questions predict turnover.

Definition of Terms

Medical technologist. An individual who has completed four years of college with a Bachelor of Science degree in medical technology or a Bachelor of Science degree that includes 16 hours of chemistry, 16 hours of biology, and one semester of math and is qualified to perform laboratory tests that require the exercise of independent judgment and

responsibility under the supervision of the laboratory director or supervisor.

Job satisfaction. A participant's score in the Job Descriptive Index.

Attrition. As used in this study, the loss of medical technologists to other fields or professions.

Marcus Paul Placement Profile (MPPP). An instrument designed to measure work behavior type (described more fully in Chapter II).

Work behavior type. A description of an individual's general qualities and behaviors as they relate to the work situation and derived from responses on the Marcus Paul Placement Profile.

Job Descriptive Index (JDI). An instrument designed to measure job satisfaction (described more fully in Chapter III).

Organization of the Study

The remainder of this study is organized into four chapters. Chapter II presents a review of the literature and research on job satisfaction, attrition, and development of work behavior types. It concludes with a review of the literature on these topics as they relate to medical technologists.

Chapter III describes the design and methodology of the study. It contains the research design, population, data collection, instrumentation, and procedures.

Chapter IV contains the results of the study, including data analysis, and discussion.

Chapter V includes a summary of the study, conclusions about the findings, implications, and recommendations for additional research.

CHAPTER II
REVIEW OF RELATED LITERATURE

Organization of the Chapter

This review covers four areas. The first section presents an overview of research on job satisfaction. This is followed by a review of the literature on turnover, including the relationship between job satisfaction and turnover. The next section consists of research and theories leading to the development of work behavior types and the Marcus Paul Placement Profile. The final section provides a synthesis of the research on job satisfaction, attrition, and career development in medical technology.

Job Satisfaction

Definition

According to Locke (1976), more than 3,000 articles, books, and dissertations have been written about job satisfaction. Gruneberg (1979) stated it was one of the most researched topics in psychology. Because job satisfaction impacts on the well-being of individuals, organizations, and society, it is not surprising to find a large volume of research on this subject.

Numerous definitions of job satisfaction have emerged from these studies and researchers do not agree on a single, universal definition of the term (Locke, 1969). Davis (1977) related job satisfaction to the fit between employee and job. For him, it was

> the favorableness or unfavorableness with which employees view their work. It results when there is a fit between job characteristics and the wants of employees. It expresses the amount of congruence between one's expectations of the job and the rewards that the job provides. (p. 74)

Smith, Kendall, and Hulin (1969) defined job satisfaction as "feelings or affective responses to facets of the situation" (p. 6). Wanous and Lawler (1972) listed nine different operational definitions, theoretically based on need fulfillment, equity, or work values. Porter and Steers (1973) defined job satisfaction as the "sum total of an individual's met expectations on the job" (p. 167).

The term job satisfaction is, however, distinguished from the term morale. The former refers to an individual's response to the job and the latter term refers to group well-being (Gruneberg, 1979).

Measures

Job satisfaction has also been measured by a variety of objective, descriptive, or projective instruments. Many investigators have devised new instruments or altered others to meet the demands of their particular study. Objective surveys contain questions with pre-determined responses. Descriptive surveys allow respondents an opportunity for unstructured replies and questions are open-ended. Psychologists devise and administer projective surveys to assess mental health, usually in nonwork settings (Davis, 1977).

Herzberg (1966) used a form of descriptive survey called the critical incident technique to collect data on job satisfaction. He asked workers to think of a time when they felt especially good or bad about their jobs. While this technique has been popular, it has also been criticized (Gardner, 1977).

Wanous and Lawler (1972) determined that different measures of job satisfaction may not assess the same variables and concluded there was no one best way to measure this construct. In a later review of the literature, Gruneberg (1979) drew the same conclusion and added that the best measure of job satisfaction depended on the variables under investigation.

However, the Job Descriptive Index (JDI) developed by Smith, Kendall, and Hulin (1969) has been regarded as the most reliable, carefully developed, and researched instrument for measuring job satisfaction. After examining inventories and terms used by previous investigators to describe the same or similar facts, Smith and co-workers found five common factors in these inventories. They included a general factor, a pay and material rewards factor, the work itself, a supervision factor, and a factor related to other workers on the job. These factors formed the five subscales of the JDI and measured satisfaction with work, pay, opportunities for promotion, supervision, and co-workers.

History

Historically, industrial psychologists have been interested in job satisfaction since the early 1900s. In 1911, Frederick Taylor brought principles of scientific management to the work setting. Using time and motion studies at the Bethlehem steelworks, he redesigned equipment, simplified, fragmented, and compartmentalized work tasks, and placed workers under continuous supervision. Although primarily concerned with increasing productivity and efficiency, Taylor also called attention to the importance of the human element in getting the job done.

In the 1920s, the "human relations" school of thought on job satisfaction emerged from the Hawthorne studies conducted by Elton Mayo (1933). Like Taylor, Mayo sought to find ways to improve productivity by altering physical work conditions. However, he also observed that human relationships within the organization were more important to the workers. He contended that "friendly" relationships between employees and supervisors or between co-workers led to job satisfaction. Job satisfaction, in turn, led to higher productivity.

Hoppock (1935) published results of several studies on job satisfaction. He used survey methods and attitude scales to collect his data. He concluded job satisfaction consisted of many factors. The presence of these factors in the work situation led to satisfaction while their absence led to job dissatisfaction. He also examined the relationship among job satisfaction, life satisfaction, and mental health. In a survey involving 500 teachers, 21% of the least satisfied teachers were from unhappy homes, compared to only 6% of the teachers expressing high satisfaction.

Theories

Campbell, Dunnette, Lawler, and Weik (1970) classified current theories of satisfaction as either content or process theories. Content theories relate to factors that motivate people to work and process theories are intended to explain job satisfaction in terms of the interaction between the individual's needs and what the job actually offers.

Maslow's (1943) needs hierarchy theory is a major content theory. He explained the dynamics of job satisfaction in terms of fulfilling individual needs. Maslow arranged human needs in an ascending hierarchy.

Lower-order needs were (a) basic physiological needs, (b) safety and security needs, and (c) social (affection) needs. Higher-order needs were (d) esteem and (e) self-actualization. Lower-order needs had to be satisfied before higher-order needs could assume importance. However, once a need was met, it no longer served as a motivator.

Building on Maslow's work, Herzberg, Mausner, and Snyderman (1959) formulated the two-factor theory of job satisfaction. They claimed that two classes of work variables, the motivators and hygiene factors, influenced job satisfaction. Motivators were intrinsic factors such as achievement, recognition, advancement, responsibility, and the inherent interest of the work itself. When present in a job, motivators were satisfiers because they had a positive effect on employee output. Achievement was the strongest motivator followed by recognition. Motivators correspond to Maslow's higher-order needs.

Hygiene factors were extrinsic to the job and included pay, security, supervision, and physical working conditions. They were analogous to Maslow's lower-order needs. When absent from the job, they were linked to dissatisfaction. However, Herzberg and associates clearly pointed out that the presence of a hygiene factor doesn't automatically produce job satisfaction and the absence of a motivator doesn't necessarily lead to dissatisfaction.

Vroom's (1964) expectancy theory is representative of process theories. He proposed that job satisfaction depended on the degree to which a job met the individual's needs. Motivation depended on the workers' perceptions of the likelihood that their needs would be satisfied. Individuals ascribe valences to job outcomes such as higher pay, promotion, peer approval, and recognition, according to

their perceived importance in satisfying various needs. Workers also assign a valence to the expectancy or their perception of the likelihood the outcome will actually materialize. Motivation is a product of the valence of expectancy times the valence of the outcome.

Porter and Lawler (1968) expanded and refined Vroom's model. They developed a multivariable model to explain the complex relationship among motivation, satisfaction, and performance. They claimed that the amount of effort or motivation expended by an employee depended on the interaction between the value of the reward for them and the perceived effort-reward probability. Effort leads to performance and the level of performance depends on the employee's abilities, traits, and role expectations as well as the amount of effort expended. The rewards that follow performance and how they are perceived affect job satisfaction.

According to the Porter and Lawler model, job satisfaction depends on the extent to which rewards measure up to the individual's perceived equitable level of those rewards. In contrast to previous models, in this model the theorists recognize that job satisfaction is only partially determined by actual rewards received. The employee's perceptions of what the rewards should be for a given level of performance also play a significant role in satisfaction. Furthermore, this model states that satisfaction depends on performance and not the reverse.

Equity theorists are also process theorists who examine job satisfaction in terms of the equity in treatment workers perceive they receive compared to the treatment others receive in a similar job. Adams (1965) argued that the degree of equity or inequity perceived by

an employee is compared to other workers and forms the basis for job satisfaction and motivation. Employees contribute Inputs (skills, personal traits, and experiences) to a job. They receive Outputs (salary, promotions, praise) from the work. They form a ratio of Inputs to Outputs and compare it to other workers. The ratio must be perceived as equal for the worker to be satisfied.

Recently, attribution theory and locus of control have become important for understanding job satisfaction. Attribution theorists claim that an individual's perceived behavior is determined by internal forces (personal attributes such as ability, effort, fatigue) and external forces (environmental attributes such as rules or the weather). People behave differently when they perceive internal as compared to external attributes (Luthans, 1981).

Locus of control explains work behavior in terms of employees' perceptions of internally or externally controlled outcomes. Perceived locus of control has an impact on job performance and satisfaction. Mitchell, Smyser, and Weed (1975) tested the attribution/locus of control model and found that internally controlled employees are generally more satisfied with their jobs than employees who perceive external control.

Intrinsic Factors and Job Satisfaction

Herzberg et al. (1959) were the earliest investigators to point out the importance of changes in the actual job performed as a necessary factor for increasing job satisfaction. Success, recognition, appreciation of skills, the feeling of doing something worthwhile, and job involvement are content or intrinsic factors of the actual job performed that affect job satisfaction.

Locke (1965) demonstrated that success at a task increased job satisfaction because success enhanced self-esteem. However, the individual had to perceive the task as being important (Nord, 1977). Many individuals also require external validation of their successes and achievements in the form of tangible recognition (promotion, merit pay increase) or intangible recognition (praise). In one study, workers rated recognition by supervisors and colleagues as a major source of job satisfaction (Locke, 1976).

Workers must also be able to use their skills or abilities to feel successful at a job. Walker and Guest (1952) studied the relationship of skill level to job satisfaction among automobile production workers. They found job satisfaction was related to the amount of skill required and to the number of operations performed in a job.

Hackman and Lawler (1971) examined the relationship of job satisfaction to job variety, job autonomy, job identity, and feedback. Findings on job variety agreed with those of Walker and Guest (1952). However, Hackman and Lawler (1971) added that not all employees preferred task variety in their jobs. Individuals with little interest in meeting higher-order needs were satisfied with repetitive work. The degree of job autonomy (the extent to which individuals make decisions about their jobs) was also positively correlated to job satisfaction. Workers free to choose their own methods and pace of work were satisfied. Task identity or wholeness of the work was important for job satisfaction among workers with higher-order needs. They had to perform an entire piece of work for it to have meaning and be satisfying.

Lodahl and Kejner (1965), Weissenberg and Gruenfield (1968), and Hall, Schneider, and Nygren (1970) reported a positive correlation between job satisfaction and job involvement. Job involvement is the extent to which an individual identifies with a particular job (Gruneberg, 1979). Individual attitudes toward work (Lodahl, 1964), strength of higher-order needs (Hackman & Lawler, 1971), and the organizational structure or situation (Argyris, 1964; Rabinowitz & Hall, 1977) influence job involvement. However, little is known about how individuals develop an interest in a particular job (Gruneberg, 1979).

Extrinsic Factors and Job Satisfaction

Although intrinsic factors are generally regarded as most important for job satisfaction, extrinsic or context factors also play a significant role. These factors include pay, job security, work groups, and supervision.

Pay is an important aspect of job satisfaction. It provides more to individuals than the means to purchase goods and services. Pay is often associated with achievement, recognition, and worth; Wernimont and Fitzpatrick (1972), however, found significant individual differences in the meaning of money according to the stage of career development, experiences, sex, economic status, and personality of the worker.

The actual level of pay is not as important to job satisfaction as the relative level. According to the equity theorists (discussed earlier), workers compare themselves to other workers in terms of Inputs and Outputs. Individuals weigh the equity of their pay in terms of their skills, amount of effort, responsibility, and

experience compared to pay received by similar workers. Dissatisfaction occurs when the pay received is not perceived as equitable (Warr & Wall, 1975).

Many individuals rate job security as a leading factor for job satisfaction. It is one of Herzberg's Hygiene factors and, when absent, causes job dissatisfaction. When it is present, however, it is unimportant. Our society places a high value on work. Individuals associate having a job with competence and worth. Siassi, Crocetti, and Spiro (1975) identified a higher incidence of mental illness in the unemployed compared to others. Herzberg, Mausner, Peterson, and Capwell (1957) pointed out the importance of the work group and social aspects of the job for job satisfaction. Maslow (1943) also included needs for social interaction as a basic lower-order need. Walker and Guest (1952) demonstrated that workers with isolated jobs were more dissatisfied than others. In addition, Van Zelst (1952) found that job satisfaction, turnover, and productivity improved when workers were permitted to select their work mates. Workers of similar backgrounds, skills, and values formed cohesive work groups. These groups also provided support, generated feelings of self-esteem from being valued by others, and were a source of satisfaction derived from cooperating with others to achieve common goals.

Supervision is another extrinsic factor involved in job satisfaction. The "human relations" school of management regarded "friendly" supervision as vital for the improvement of job satisfaction. The Hawthorne studies related increased productivity to increases in friendly supervision. However, these results have been questioned and increased productivity may have resulted in friendlier supervision (Gruneberg, 1979).

Weed, Mitchell, and Moffitt (1976) examined the relationship between leadership style and job satisfaction. They distinguished between employee-oriented leaders who established personal relationships with employees and were pleasant and leaders who were task-oriented and saw the group as a vehicle for achieving production targets. Task-oriented leaders also initiated and organized the work. However, Warr and Wall (1975) pointed out that task-oriented leaders were not necessarily the opposites of employee-oriented leaders. Task-oriented leaders also demonstrated concern for employees while organizing the work.

House (1971) stated that different groups of workers wanted and expected different styles of leadership. Unskilled and semi-skilled workers resented the task-oriented supervisor. High-level workers found this type of supervision satisfying because it helped them achieve goals.

One of the major sources of discontent among workers is the feeling that they have no say in what happens to them. A number of studies have indicated that a democratic style of leadership increases job satisfaction and cooperation (Coch & French, 1949; Startup & Gruneberg, 1973). Workers usually indicate a desire to participate in decision making, especially when the decision directly affects them (Hespe & Wall, 1976). Employee participation in decision making not only results in higher job involvement and greater commitment to the decisions made, it also produces better decisions, develops group cohesion, and establishes group norms (Argyle, 1972). The Japanese have capitalized on participatory management theories. Their success

as world leaders in technology has been largely attributed to this management style (Ouchi, 1981).

Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) and Keller (1975) studied job satisfaction in terms of role ambiguity and role conflict. Individuals experience role conflict when the behaviors expected of them are inconsistent with the behaviors they expect of themselves. They experience role ambiguity when expectations are unknown or unclear. Role ambiguity and role conflict in the job situation often create stress and job dissatisfaction. However, there are differences related to the occupational level of the worker (Kahn et al., 1964; Schuler, 1977). Role ambiguity was more stressful for higher level personnel in organizations, whereas lower level personnel experienced more job dissatisfaction when role conflict existed.

Organizational climate or the quality of the total workplace environment also affects job satisfaction. However, Friedlander and Margulies (1969), Pritchard and Karasick (1973), and Schneider and Snyder (1975) pointed out that individual differences played a significant role in the relationship between these factors. For example, organizations with high levels of control appealed to workers with strong needs for security, whereas creative individuals or those who preferred to participate in decision making favored more democratic organizations. Supportiveness, concern for social relationships, progressiveness, harmony, and consideration were important aspects of organizational climate correlated to high job satisfaction.

Individual Differences

In addition to the content and context factors of the job, individual differences between people affect job satisfaction.

Researchers have considered the influence of age, sex, educational level, race, cultural background, and personality. However, results from this area of job satisfaction research have not been as consistent or reliable as results from other areas.

Herzberg, Mausner, Peterson, and Campbell (1957) found a U-shaped relationship between age and job satisfaction. Job satisfaction starts out high in the young worker, declines rapidly, and then rises again with increasing age. Supposedly, as individuals age they adjust more easily to work and life situations. Hunt and Saul (1975) related age and job satisfaction to the sex of the worker and found significant relationship only in males. Glenn, Taylor, and Weaver (1977) found a significant relationship in both sexes. Hulin and Smith (1965) disagreed with the U-shaped relationship between age and satisfaction. They found that satisfaction declined five years before retirement. At this stage of a worker's career, opportunities for growth and promotion usually declined.

Studies relating sex to job satisfaction have also been contradictory. According to traditional thinking, men and women had different attitudes and values about work and jobs. Schuler (1975) stated that women were more interested in the social aspects of the job, whereas men were interested in self-expression and promotion opportunities. Herzberg et al. (1957) also reported that males regarded the intrinsic factors of the job as more important than females did. Brief and Oliver (1976) found no significant sex-related differences in work attitudes, particularly when other variables (occupational level, salary, career orientation) were statistically controlled.

Klein and Maher (1966) and Vollmer and Kinny (1955) reported a negative correlation between education level and job satisfaction. These findings suggested that employees with higher levels of education expected more from their jobs and became more dissatisfied when the job failed to meet those expectations. They also pointed out the problems in hiring over-qualified individuals for positions, or unnecessarily raising the academic qualifications for a job. Herzberg et al. (1957) showed a positive relationship between education and job satisfaction.

In a 1973 survey conducted by a Special Task Force, job satisfaction among minority groups was consistently lower than satisfaction among white workers. However, Jones, James, Bruni, and Sells (1977) found no differences in overall job satisfaction among black and white sailors matched by type of job.

The relationship between job satisfaction and personality factors has not been thoroughly researched (Gruneberg, 1979). Clearly, however, aspects of personality determine the extent to which different job characteristics affect an individual's job satisfaction.

For example, McClelland (1961) demonstrated that individuals with high needs for achievement required challenging jobs to enhance their self-esteem and provide them with job satisfaction. Steers (1975) found that individuals with high achievement needs derived job satisfaction from high levels of job performance. These high achievers became involved in their jobs when they perceived opportunities for success and rewards as a result of performance.

Self-esteem is another personality dimension related to job satisfaction. Warr and Wall (1975) argued that job satisfaction declines when an individual's self-esteem is threatened. This may occur when workers are unable to apply skills or are placed in situations where they compare poorly with other workers.

Korman's (1977) findings on self-esteem and job satisfaction were comparable to Steer's results for high achievers and job satisfaction. He demonstrated that those with high self-esteem were satisfied when they performed well on the job. However, these individuals also expected rewards for high performance and experienced job dissatisfaction when they did not receive those rewards.

Many studies have focused on the relationship between personality type, measured by the Myers-Briggs Type Indicator (MBTI), and job satisfaction. The MBTI is an instrument designed by Myers (1962) to identify personality type according to dimensions of extraversion (E) or introversion (I), sensing (S) or intuition (N), thinking (T) or feeling (F), and judging (J) or perception (P).

Brown's (1973) study of occupational therapists in Florida, William's (1975) study of medical technologists, and Kuhn's (1981) study of teachers revealed that extraverts were more satisfied with their overall careers than introverts. Fellers (1974), French and Rezler (1976), and Glenn (1982) found no relationship between personality type and job satisfaction among dietitians, medical technologists, and vocational education administrators. In 1975, Clitsome studied job satisfaction and turnover of intensive care (ICU) and general staff nurses. Among ICU nurses, judging types were more

satisfied than perceptive types. Among general staff nurses, the STJ types were more satisfied with work than the NFP types.

In summary, job satisfaction is a complex, multifaceted attitude. A variety of content (success, recognition, appreciation, job variety, job autonomy, job involvement), context (pay, job security, supervision, work groups, role ambiguity, role conflict, organizational climate), and personal factors (age, sex, education level, race, personality type, tenure) affect an individual's job satisfaction. Job satisfaction, in turn, impacts on many other aspects of life. The relationship between job satisfaction and turnover will be discussed in the next section.

Turnover

This section is a review of literature describing the turnover process. It will include definitions of turnover, consequences for the individual and organization, predictor variables (personal, organizational/work-related, job content, attitudinal), and turnover models.

Definition

Turnover has also been a well researched topic. According to Steers and Mowday (1981), more than 1000 studies have appeared in the literature since 1910.

Brayfield and Crockett (1955) described turnover as an extreme behavior along a continuum of behaviors showing psychological withdrawal of commitment to a job. Absences, lateness, grievances, strikes, and sabotage are less extreme forms of withdrawal behavior that may precede or substitute for turnover when quitting is not a viable option. Because most turnover is voluntary (Price, 1977), Price and Mueller

(1981) called turnover "a voluntary separation from an organization" (p. 2).

Gillies (1982) classified turnover as unavoidable or avoidable. Marriage, childbearing, or transfer of a spouse were associated with unavoidable turnover, where avoidable turnover resulted when a job failed to meet the employee's needs or expectations.

Consequences

Turnover has increased significantly in many organizations over the past 20 years. Turnover rates of 50% to 60% are not unusual (Silver & Berke, 1981).

Turnover has both negative and positive consequences for the organization, the individual leaver, and the individual stayer. For the organization, the cost of replacing one employee is high. Direct and indirect costs are involved. Direct costs include expenses for recruiting, selecting, processing, orienting, and training new employees. Indirect costs are incurred for overtime pay for remaining employees to complete the work. New employees are also less efficient and productive during training periods (Gillies, 1982).

Turnover also has potentially desirable consequences for organizations. These include replacement of poor performers, opportunities for cost reduction, consolidation, introduction of new knowledge/technology, and internal mobility (Mobley, 1982).

The cost of turnover for the individual who decides to leave an organization may include increased stress, disruption of family and social life, loss of seniority and nonvested benefits, and moving expenses. Advantages of quitting could include higher earnings,

career advancement, better person-organization "fit," stimulation from a new environment, and self-development (Mobley, 1982).

Most researchers have neglected the "stayers" in the turnover process. Those who remain with the organization may become overburdened by the increased workload created by the loss of an employee. Performance may decline as a result of the increased demands and stress. Morale, commitment, and satisfaction may decrease, especially if the departing employee voices strong negative opinions about the job or organization. Leavers may also make others aware that better jobs are available elsewhere. When the departing employee was a valued member of the work group, social and communication patterns may be disrupted by the loss of this employee. On the other hand, turnover may increase promotion opportunities for those who remain and the new replacement may fit in better with coworkers (Mobley, 1982).

Personal and Demographic Predictor Variables

Researchers have identified critical factors involved in the turnover process. Some investigators have examined personal and demographic variables as predictors of the decision to terminate employment. These factors include age, tenure, and family responsibilities.

With few exceptions, there is a strong positive relationship between age and turnover (Muchinsky & Tuttle, 1979). However, Mobley, Griffeth, Hand, and Meglino (1979) pointed out that age was related to many other variables and, alone, explained only 7% of the variance in turnover.

Tenure in an organization (length of service) is consistently, inversely related to turnover (Muchinsky & Tuttle, 1979). Mangione

(1973) and Steers (1977) suggested tenure was one of the single best predictors of turnover behavior.

Family responsibilities, including marital status and number of dependents, are also associated with turnover. For males, increases in family responsibilities are inversely related to withdrawal. However, for females, the relationship depends on the wage earner status of the employee. When women work as primary wage earners, there is a negative relationship between family responsibilities and turnover, whereas for women who are secondary wage earners, increases in family responsibilities are positively correlated to withdrawal (Federico, Federico, & Lundquist, 1976).

Schuh (1967) attempted to predict turnover from personality and vocational inventories and biographical information. Although he found no relationship between turnover and scores on intelligence, aptitude, or personality tests, he did find evidence for predicting turnover from vocational interest inventories and biographical information.

Organizational and Work Environment Variables

Pay, promotion, supervision, and peer group relations are organizational and work environment factors related to turnover. Early studies indicated that low pay and few promotion opportunities were major reasons for withdrawal (Mobley et al., 1979). Knowles (1964), Hulin (1968), and Federico, Federico, and Lundquist (1976) pointed out that the perceived equity of pay and promotion was more important than the actual pay received in the decision to stay or quit. Recent studies suggest there is no relationship between pay, promotion,

and turnover (Koch & Steers, 1978; Kraut, 1975; Mobley, Horner, & Hollingsworth, 1978).

These inconsistencies may be attributed to other variables that mediate the effects of pay satisfaction on turnover. Mobley (1977) and Mobley et al. (1978) reported that intention to quit and intention to search for another job were the direct antecedents of turnover. Pay satisfaction may be more correlated to these variables than to actual turnover.

Motowidlo (1983) examined the relationship between pay satisfaction, amount of pay, expectations of receiving more satisfying pay in another job, withdrawal intentions, and actual quitting. Satisfaction with pay explained 43% of the variance in withdrawal intentions beyond that explained by age, tenure, general satisfaction, amount of pay received, and pay expectation. Although the amount of pay received was weakly correlated to turnover, results suggest it is strongly associated with pay satisfaction which, in turn, is related to withdrawal intentions.

Saleh, Lee and Prien (1965) demonstrated the importance of supervisory behavior as a variable in turnover among hospital nurses. Nurses cited lack of consideration from supervisors as a major reason for leaving. Ley (1966), Hulin (1968), and Graen and Ginsburgh (1977) obtained similar results for production and clerical workers.

Bassett (1967) related turnover to the amount of supervisory experience. Employees supervised by individuals with less than 5 years of management experience withdrew at a higher rate than employees with more experienced supervisors.

Although studies, generally, offer support for a negative relationship between satisfaction with supervision and turnover, Mobley et al. (1979) identified several recent studies that show no significant relationship between these variables. The nature of the leadership measures and the need for multivariate analyses may explain these results.

Research conducted during the past 10 years on the relationship between peer group interactions and turnover indicates no significant correlation between these variables (Mobley et al., 1979). Although Koch and Steers (1978) found a significant relationship between satisfaction with co-workers and turnover, only 4% of the variance in turnover was explained by this factor.

Studies prior to 1973, however, indicated a strong, negative impact of peer group relations on turnover (Evan, 1973; Farris, 1971; Hulin, 1968; Schuh, 1967). Porter and Steers (1973) suggested that individual needs for affiliation played an important role in explaining discrepant findings in this area of turnover research.

Job Content Variables

Satisfaction with the work itself, task repetitiveness, job autonomy and responsibility, and role clarity are job content variables impacting on an employee's decision to terminate employment.

Satisfaction with the work itself is negatively correlated to turnover. However, it explains less than 16% of the variance in turnover (Mobley et al., 1979).

Routinization of jobs and task repetitiveness contribute to turnover. Job stress is an intervening variable. Increases in

routinization result in greater job stress; job stress, in turn, leads to higher turnover (Porter & Steers, 1973).

Numerous studies (Farris, 1971; Lawler, 1973; Porter & Steers, 1973) indicate that high job autonomy results in low turnover. However, job satisfaction may be an intervening variable (Price & Mueller, 1981).

Weitz (1956) demonstrated that role clarity played a significant part in turnover. In a well controlled study, he demonstrated that applicants who had detailed information about their jobs prior to employment remained with the organization longer than those who had little or no information about their jobs. Macedonia (1969) and Youngberg (1963) drew the same conclusions from their studies.

Lyons (1971) added that the relationship between role clarity and turnover may depend on individual tolerances for job ambiguity. Tolerant individuals are not affected by unclear roles, whereas those low in tolerance for job ambiguity withdraw at a higher rate when roles are not well defined.

Attitudinal Variables

Turnover has also been assessed in terms of attitudinal variables designed to measure workers' perceptions and feelings about their jobs and organizations. These variables include job satisfaction, organizational commitment, satisfaction of expectations, and existence of perceived conflicting standards.

Research has generally supported the premise that a satisfied worker will remain with the organization and attend work regularly. In 1973, Porter and Steers reviewed 60 studies on employee turnover. They found consistent evidence that job satisfaction represented an

important influence on turnover. The average correlation between these variables was .25. Although the magnitude of the relationship was small, it was consistent.

Vroom (1964) described the relationship between turnover and job satisfaction in terms of his expectancy/valence theory. He theorized that the decision to leave was a function of the difference in strength between forces to remain and forces to leave. The force to remain was reflected in job satisfaction levels. The force to leave was influenced by the valence of outcomes individuals could not attain unless they left their present position as well as by the expectancy that these outcomes could be attained elsewhere.

Hulin's (1966) study is a notable example of research relating job satisfaction and turnover. Using the JDI, he obtained baseline job satisfaction measures on all female clerical workers who participated in the study. Each subject who subsequently left the company during the next 12 months was matched to two "stayers" along several demographic variables. The leavers had significantly lower mean job satisfaction scores than the stayers. Hulin concluded he could predict leavers, at least on a group basis, using job satisfaction measures.

In 1968, Hulin repeated the study in the same company and obtained similar results. However, scores on four of the five scales of the JDI had risen and the turnover rate dropped more than 50%. He linked these changes to new salary and promotion policies instituted by the company after the first study.

Recent literature suggests that job satisfaction is indirectly related to turnover. It may act as a precursor for other behaviors,

constructs, and processes that are more important predictors of withdrawal (Parasuraman, 1982).

Organizational commitment, involvement, and job attachment have been the subjects of other investigations on turnover. Porter, Steers, Mowday, and Boulian (1974) defined organizational commitment as "the strength of an individual's identification with and involvement in a particular organization" (p. 604). They found it was significantly and negatively related to turnover. Intention to remain is a component of commitment. Porter et al. (1974), Steers (1977), and Marsh and Mannari (1977) found that commitment had a higher negative correlation to turnover than job satisfaction.

Koch and Steers (1978) stated that job attachment was significantly and negatively related to turnover. They defined job attachment as "an attitudinal response to one's job." While related to organizational commitment, job attachment focuses more specifically on the job or occupation rather than on the organization.

Porter and Steers (1973) explained the diverse views on turnover by a theoretical framework based on met expectations. They proposed that each individual brings a unique set of expectations for a job to the employment situation. Individuals are less likely to quit if they perceive their expectations are being met on the job. The decision to remain is based on a process of balancing rewards (received or potential) with expectations. The studies of Farr et al. (1973), Wanous (1973), and Federico et al. (1976) supported this position.

Availability of Alternatives

Limited research has been conducted on the role of available alternatives in the turnover process. Woodard (1975-1976) found a

negative relationship between unemployment and turnover and a position relationship between available jobs and withdrawal rates. Locke (1976) and Price (1977) also documented the relationship between economic factors and turnover. Mobley et al. (1978) stated that the expectancy of finding an acceptable alternative job was significantly and positively correlated to intention to quit but not to actual resigning. However, intention to quit was significantly and positively related to turnover.

Turnover Models

Until recently, most of the studies on turnover have been limited and have failed to provide a comprehensive view of the withdrawal process. Mobley (1982), Mowday, Porter, and Steers (1982), and Steers and Mowday (1981) have advocated the development of process-oriented models of turnover based on multivariate analyses and longitudinal research.

In 1958, March and Simon proposed a participation model. This model serves as a basis for many current theoretical models of turnover that specify the various processes underlying the decision to withdraw. According to the model, the decision to leave an organization depends on the individual's perception of the desirability of movement and ease of movement. The level of job satisfaction influences desirability to leave. Available alternatives, the current economy, and the personal characteristics of the individual influence ease of movement.

Price (1977) extended the March-Simon model by adding a variety of variables to explain turnover. He suggested that five organizational factors determined job satisfaction. These were pay, integration

(the degree to which an individual has close friends in the organization), instrumental communication (degree to which information about a job is transmitted by an organization to its members), formal communications, and centralization (degree of autonomy). Job satisfaction, in turn, combined with opportunity to leave to determine actual turnover.

Mobley (1977) also presented a conceptual model of turnover, focusing on the intermediate steps between job satisfaction and the decision to leave. He stated that job dissatisfaction led to thinking about quitting, intention to search, intention to stay or leave, and, finally, to actual quitting. He also argued that intention to leave was a more accurate predictor of actual turnover than job satisfaction.

In 1978, Mobley, Horner, and Hollingsworth evaluated Mobley's model on 203 hospital employees. Their results supported the accuracy of the model and the contention that the behavioral intention to leave was a more important determinant of turnover than job satisfaction. Behavioral intent correlated .49 to turnover, whereas dissatisfaction correlated .21 with the decision to withdraw.

Earlier studies by Atchinson and Lefferts (1972), Kraut (1975), and Waters, Roach, and Waters (1976) also indicated that behavioral intentions to leave or remain with an organization account for more variance in turnover than does job satisfaction. Job satisfaction, however, was a salient precursor of behavioral intentions.

Miller, Katerberg, and Hulin (1979) evaluated the Mobley-Horner-Hollingsworth (1978) model and proposed a more general model of the turnover process. They collapsed the seven variables that Mobley and his coworkers studied into four general constructs: career mobility

(age, tenure, probability of finding another job), job satisfaction, withdrawal cognitions (intention to quit, intention to search), and withdrawal behavior (turnover).

Mobley, Griffeth, Hand, and Meglino (1979) presented an expanded turnover model focusing on behavioral intentions (intention to search, intention to quit) as the immediate precursor of turnover. The model also recognized the role of perceptions, expectations, values, and available job alternatives as factors in the decision to leave an organization.

In 1981, Steers and Mowday proposed a comprehensive, process-oriented model of turnover. This model incorporated determinants of turnover from earlier models and featured several new dimensions of the turnover process. The new variables added to the model included job expectations, employee performance level, ability to change the work situation, and nonwork related factors that influenced the decision to leave. Figure 1 represents this 13-stage model.

Price and Mueller (1981) described a causal model of turnover, containing 13 variables or "determinants" of turnover. They posited that routinization (repetitiveness of job), participation, instrumental communication, integration, pay, distributive justice (rewards or punishments are related to job inputs) and promotional opportunity would influence turnover through the intervening variable, job satisfaction. Job satisfaction, in turn, affected intent to stay. Professionalism (degree of dedication to occupational standards of performance), amount of general training, and kinship responsibility (degree of an individual's obligations to relatives in the community)

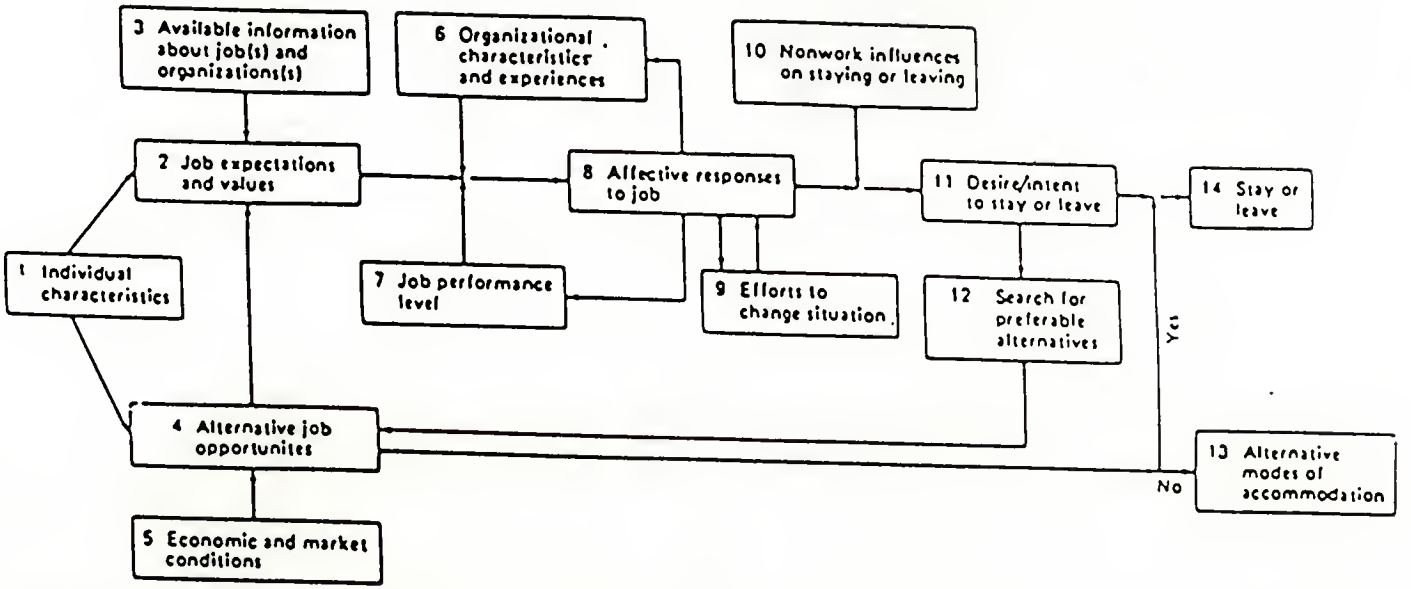

Figure 1. Steers and Mowday's (1981) model of employee turnover.

also influenced intent to stay. Intent to stay and opportunity determine actual turnover.

Arnold and Feldman (1982) tested a multivariate model of turnover on 654 accountants. The variables in their model were individual demographic factors, tenure, cognitive/affective orientations to the position (including multiple measures of job satisfaction and organizational commitment), job security, perceived availability of alternatives, intention to search for alternatives, intention to quit, and actual turnover.

Results indicated that the most powerful model of turnover behavior contained four significant predicator variables: tenure, overall job satisfaction, perceived job security, and intention to search for an alternative position. The results also suggested that all variables did not influence turnover behavior through their impact on intentions to change positions. Several variables explained additional, unique variance in turnover behavior beyond that explained by intentions. Turnover was more strongly related to intentions to search for alternatives than to intentions to quit. Intentions to search for alternatives were, in turn, highly predictable by a combination of age, job satisfaction, and organizational commitment.

Using the Mobley et al. (1979) model, Youngblood, Mobley, and Meglino (1983) analyzed turnover among Marine Corps enlistees. The authors assessed the enlistees over a four-year period on the variables posited in the model. These were behavioral intentions, expected utility of the present role, expected utility of alternative roles, and satisfaction. For subjects who left the Marines both early and later in the enlistment period, behavioral intentions to continue were

lowest in the period immediately prior to leaving. For those who left early, the perceived likelihood of finding an alternative job appeared to influence the turnover decision. Results supported earlier research that suggested behavioral intentions were a diagnostic precursor of turnover.

Rusbult and Farrell (1983) also conducted a longitudinal study of turnover using an investment model to predict turnover. They stated that, in general, high rewards (high pay, autonomy, variety) and low job costs (unexpected variations of workload, numerous deadlines, inadequate resources, unfair promotion practices) generated higher employee satisfaction. Job commitment increased with higher rewards, lower costs, greater investment of resources (years of service, nonvested benefits, work-related friendships), and less attractive alternatives. The impact of rewards on job satisfaction and commitment remained constant over time. However, the effects of job costs and investments increased with time. Just prior to leaving, the job commitment of leavers was best predicted by a combination of rewards, costs, and alternatives.

In summary, numerous variables are involved in the decision to withdraw. Some variables are organization-related (pay, promotion policies), whereas others are related to the immediate work environment (supervision, peer group relations). The content of the job (nature of the job itself, autonomy, routinization, role clarity), characteristics of workers (age, tenure, family responsibilities), their attitudes about the job (overall job satisfaction, satisfaction of expectations, organizational commitment), and economic factors (availability of alternatives) influence the withdrawal decision.

Several researchers have developed models incorporating these variables to explain and predict the turnover process.

Organizations and individuals have also recognized that matching the right person to the right job influences job satisfaction, productivity, and turnover. Research on person/job matching and work behavior type will be reviewed in the next section.

Work Behavior Type

Research on work behavior type itself has been limited. Therefore, this portion of the review will focus on research related to person/job matching and work behavior type. It will include a definition of work behavior, contributions of industrial and educational psychology to person/job matching, theories of vocational choices, history of work behavior types, and development of the Marcus Paul Placement Profile.

Definition

According to Neff (1969), adult work behavior is "the complex product of a long series of learned and habitual styles of perceiving and coping with demands of the environment" (p. 72). Coping behaviors consolidate to form a particular "work style."

Industrial Psychology

Many researchers have claimed that work behavior is a distinctive area of human behavior and, therefore, requires separate theories to explain the behavior of people at work (Neff, 1969; Bass & Barrett, 1974). The field of industrial psychology evolved, specifically, to address the issues, problems, and behaviors of people in the work environment.

During World War I, industrial psychologists made major contributions to testing. The Army needed a fast way to place large

numbers of men in optimal assignments. Industrial psychologists responded by developing a series of psychological tests to match men to jobs (Siegel & Lane, 1982).

Recently, spiraling labor costs, increased demands for productivity, international competition, rising costs of turnover, and the heterogeneity and educational level of the work force have forced many organizations to examine their personnel selection and placement procedures (Cascio & Awad, 1981).

Industrial psychologists have responded to these needs by developing new methods to improve selection and placement programs. The methods focus on improving the predictive powers of managers in selecting the individual who can satisfactorily perform a job or work activity.

Traditionally, organizations relied heavily on results from intelligence, personality, interest, aptitude, or achievement tests in the selection process. However, the advent of civil rights legislation and equal employment opportunity guidelines frightened many organizations into abandoning testing completely (Luthans, 1981).

Interviewing has also been a traditional selection procedure. Many consider it an art rather than a science (Luthans, 1981). Evidence suggests that interviews are less valid than tests in selection for the following reasons (Porter, Lawler, & Hackman, 1975):

1. The same material is not covered in each interview.
2. Different interviewers weigh the same information differently.
3. Except for intelligence or mental ability, interviewers cannot assess traits accurately.
4. Interviewers make selection decisions early in the interview, before the candidate has presented all information.

5. Interviewers give more weight to negative than to favorable information.

Selection problems inherent in testing and interviewing have led organizations to assessment centers for assistance in hiring and promoting people. The assessment center is a holistic approach to selection and uses multiple assessment techniques and multiple assessors. It also demonstrates high validity and selection fairness for men, women, minorities, and nonminorities. The center method has been successful and cost effective for organizations (Cascio & Awad, 1981).

Assessment techniques include in-basket exercises, leaderless group discussions, paper and pencil ability tests, simulations, personality questionnaires, projective tests, and background interviews. Assessors are trained to standardize interpretations of candidates' behaviors and go through the training as participants before rating others. Selection decisions are derived from the pooled judgments of all assessors.

The dimensions, attributes, characteristics, or qualities that are evaluated are derived from an analysis of relevant job behaviors. McCormick and his associates (1964) analyzed characteristics common to a variety of jobs in terms of worker activities (job content) and prerequisites (attributes). They developed the Position Analysis Questionnaire (PAQ) to rate job elements for different jobs. The PAQ consists of 194 job elements that were reduced to 30 job dimensions which, in turn, were subsumed under six major activity categories:

1. Information input (where and how the worker gets the information used for the job).

2. Mental processes (decision making and information processing).
3. Output (the physical activities performed by the worker and tools or devices used).
4. Interpersonal activities (communicating instructions, supervising others).
5. Job context in which the work is performed (stresses, hazards).
6. Miscellaneous aspect of the work activities (work schedule, clothing worn).

Job analysis methods and new assessment techniques are an attempt to bring the individual, job, and organization together for a potentially rewarding relationship. When the matching process is successful, it is mutually beneficial to the individual, organization, and society.

Educational Psychology

Although industrial psychologists focus on people who are already working and educational psychologists concentrate on people in school, their interests often overlap. Educational psychologists, however, place more emphasis on career development and planning, occupational choice, and career counseling than their industrial counterparts.

The need and demand for career development and planning have never been greater than they are today. Employees realize that their careers impact not only on the quality of their work life but on the quality of life in general. Organizations recognize the effect of the quality of life on employee job satisfaction, performance, and turnover (Luthans, 1981).

Career decision making has also become complex. Social and legal changes have opened up a range of career alternatives and opportunities

for both men and women. Technology has created a rapid pace of change in the labor market. New jobs emerge as others become obsolete. Medical advances have expanded life expectancy. Instead of one career decision, people must make multiple career decisions in a lifetime.

Theories of Vocational Development

Several authors have proposed theories of vocational development and occupational choice. Ginzberg, Ginsburg, Axelrod, and Herma (1951) argued that occupational choice was an irreversible process. It took place over 8 to 10 years and passed through a number of well-marked developmental stages. Early decisions reduced the number of successive choices and available options.

Occupational decision making occurs in three stages. The fantasy stage occurs between ages 10 and 12. Children at this stage have no conception of their capabilities, occupational limitations, or opportunities. During the tentative stage, adolescents think about occupations in terms of their abilities and interests. The realistic stage is characteristic of late adolescence and early adulthood when individuals become more concerned with realistic opportunities and the limitations of the available work environment. The final occupational choice is a compromise between personal preferences (interests, abilities) and the constraints of the work world.

In 1971, Ginsberg revised his earlier position and claimed that occupational choice was "open-ended" throughout a person's life. Choice was influenced by work experiences, changes in values, physiological changes, marital relationships, financial status shifts, and loss or change in job.

Super's (1953) theory of vocational development was based on the premise that people selected occupations consistent with their self-concept. The self-concept developed in the individual over time and passed through many stages of formation, differentiation, and articulation. Using a longitudinal research design, Super attempted to assess the components of the self-concept at different points in time and to correlate these components to the career patterns that emerged.

Using psychoanalytic theory, Roe (1956) hypothesized that career development and occupational identity formed during early childhood. The quality of the parent-child relationship had a strong influence on the development process. She devised a typological classification of occupations according to the amount of involvement with people or objects demanded by the occupation. She also classified types of early parent-child relationships. Positive parent-child relationships predisposed the child to enter person-oriented occupations, whereas a negative family atmosphere led to a nonperson-oriented occupation. In 1964, Roe revised her original hypothesis and said vocational development was more complex and vocational behaviors developed independently of early childhood experiences.

Holland (1959) developed a typology theory of career choice. His theory is based on the assumption that most people in our culture can be classified into one of six types: realistic, investigative, artistic, social, enterprising, or conventional. He also identified six types of environments: realistic, investigative, artistic, social, enterprising, and conventional. Individuals search for the environment that will allow them to exercise their abilities and values and

assume acceptable roles. People's behaviors are determined by the interaction between their personalities and the characteristics of the immediate environment.

Holland also assumed that at the time people selected a career, they were the product of heredity and a variety of environmental factors, including peers, parents, other significant adults, social class, culture, and the physical environment. From this background, the individual developed a typology or hierarchy of orientations for coping with environmental tasks. When people make career choices, they are searching for those environments that are congruent with their personal orientations. Holland (1959) devised the Vocational Preference Inventory to estimate personality patterns.

Tiedman (1961), like Super (1951), was interested in the development of the vocational self-concept. He based his work on Erickson's (1959) theory of personality development and psycho-social crisis. Tiedman related vocational development to the process of decision making and adjustment from a period of exploration to final integration.

Recently, it has become popular to view career and occupational development as a major component of adult life stages (Levinson, 1978; Sheehy, 1977). Hall (1976) synthesized these adult life-stage theories into an overall model of career development. This was a psychological success-based model that integrated concepts of the self with individual task behavior and job attitudes. Hall stated that people developed in their careers through a cyclical process of goal setting, performance, feelings of success, favorable job attitudes, and goal resetting.

During the exploration stage, the young employee searched for an identity and tried out several jobs and roles. In the second stage, the employee settled down and grew in a career role. The third stage of maintenance was where the employee's productivity reached a plateau. At this time, the individual might assume a mentor role out of a need for generativity (the concern to leave something for the next generation). The individual could also stagnate, decline, or have a growth spurt. The final stage was decline. The employee searched for integrity (feelings of satisfaction with life choices and overall career).

Although there are many theories of career choice, they all reflect people's efforts to obtain a proper fit between themselves and their jobs. The closer the match, the greater the rewards for both employees and organizations.

Organizations are slowly becoming aware of their role in career planning and development to improve the effectiveness of their operations. Organizations are beginning to provide employees with workshops, counseling services, and innovative programs for special career needs (i.e. flex-time) as part of human resource management programs (Luthans, 1981).

When individuals obtain more information about themselves, they can make more accurate career decisions and find the right job. With this premise in mind, Bauch (1981) developed the Marcus Paul Placement Profile (MPPP). This instrument for measuring work behavior types had its foundations in trait and type theory.

History of Work Behavior Types

William Marston's (1927) work formed the basis for current theories of work behavior traits and types. He proposed a model of behavior based on four primary emotions: Dominance, Compliance, Inducement, and Submission. A primary emotion was "an emotion which contained the maximal amount of alliance, antagonism, superiority of strength of the motor self in respect to the motor stimulus" (Marston, 1928, p. 106).

This means that Marston designated a primary emotion according to people's reactions in a favorable environment (alliance) or unfavorable environment (antagonism). An interaction with the environment could be active (superior strength) or passive (inferior strength). Individuals need a balance between active and passive interactions with the environment. The intensity of an emotion or subsequent reaction to a stimulus, depended on the individual's past experience.

Marston described each emotion in physiological and behavioral terms. He defined Dominance as a "central release of additional motor energy directed toward dominating obstacles to a reaction already in progress (Marston, 1927, p. 349). It consists of "an increase of the self to overcome an opponent,. . .a feeling of an outrush of energy to remove opposition" (Marston, 1928, p. 140).

Dominance is a fundamental behavior, important for survival of early humans. It is the primary life-propelling emotion of human beings during the first 3 years of life (Marston, 1927). It may be a desirable emotion when competition and aggressiveness are appropriate behaviors. However, dominance may also act as a negative emotion when it is out of

control or is expressed in the wrong environment. Dominant people in authority positions may create dissatisfaction and hostility among subordinates.

Compliance is also a basic emotional response and refers to "control (but not inhibition) of tonic motor discharge reinforcement by a phasic reflex? (Marston, 1927, p. 350). It may also mean taking an interest in the stimuli and "is not to be confused with inaction or inhibition" (p. 351). Marston (1928) subsequently defined Compliance as a

> decrease of the motor self to let an opponent move the organism as if by will; either passively, by making the self give up some dominant activity, or some anti-dominant way. It is a feeling of acceptance of an object of force as inevitably just what it is, followed by self-yielding sufficient to bring about harmonious readjustment of self to object. (p. 128)

Compliant behavior results from recognizing or believing that outside forces are imminently stronger. It may occur when individuals are afraid, startled, experience sudden change, or voluntarily surrender. Compliance may also result from an intense enduring or repeated environment stimulus. Compliance may be a pleasant experience when it allows individuals to be one with God or nature, to feel empathy, or to be an effective team member.

Dominance and Compliance form one axis of Marston's two-axis model. Figure 2 illustrates this model. Although individuals display these emotions in varying degrees at various times, there is always an effort to maintain a balance between the extremes of each axis. Differences in behavior among individuals relate to the differences in the point of balance on the axis.

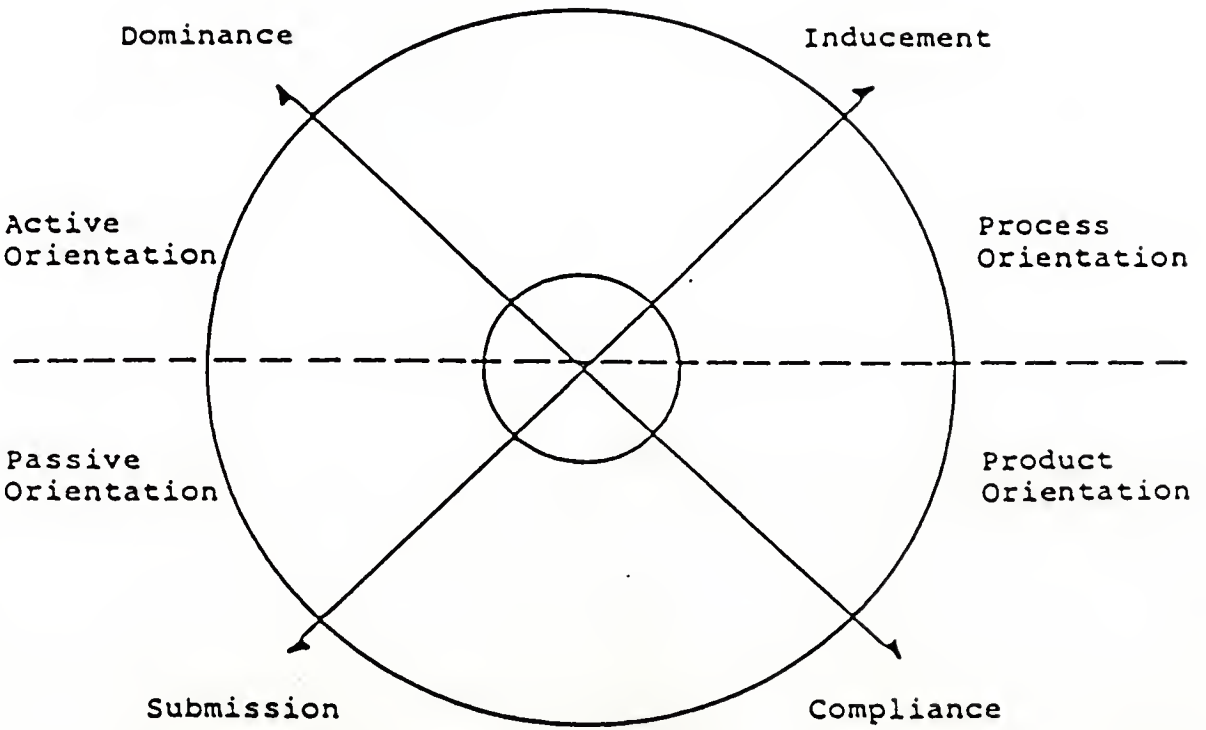

Figure 2. Marston's (1928) two-axis model.

Submission, according to Marston (1927) is a "voluntary yielding to whatever stimuli may be imposed. . .It does not seem to overwhelm, or dominate the subject by force, but rather brings about a spontaneous lessening of the subject's resistance to it until the subject has become less strong than the stimulus" (pp. 356-357). In other words, Submission is a willingness or mutual feeling of warmth between the person submitting and the person submitted to (Marston, 1928). Submission is usually a pleasant emotion and may take the form of consideration, service to others, selflessness, accommodation, and generosity.

The fourth primary emotion described by Marston (1927) was Inducement. It was the "active solicitation of attention and stimulation. . .calculated to reinforce submission reaction in order to induce further submission from another individual" (p. 539). Inducement is also a "central release of additional motor energy directed toward drawing forth or inducing submission responses from another individual" (p. 361).

In 1928, Marston's definition of Inducement stated that

> Inducement consists of an increase of self, and making of the self more completely allied with the stimulus person, for the purpose of establishing control over that person's behavior. (p. 273)

Individuals who gain voluntary submission from others exhibit Inducement behavior. This behavior may take the form of persuasion, personal charm, friendliness, seduction, or subtle manipulation. Commercial advertising is a prime example of inducement behavior in our culture.

Submission and Inducement form the second axis of Marston's model. They are also opposite ends of a continuum, separated by intensity of response (either active or passive) and by the orientation of the individual (either outward or inward). Inducement requests Submission, whereas Dominance demands Compliance. Dominance is antagonistic toward its subject and inducement is allied with its subject.

Marston divides the two axes of the model horizontally. Dominance and Inducement form the upper, active component of the model and Submission and Compliance form the lower, passive component. The dimensions represent tendencies, not all inclusive labels. Individuals exhibit degrees of all types of behaviors. Behavior traits, however, tend to cluster more around one particular dimension.

Marston identified clusters of traits for each primary emotion. Figure 3 lists these traits. Allport and Odbert (1936) and Geier (1980) used factor analyses to confirm these findings. Geier (1980) obtained an overall correlation of, at least, R=.60 between the suggested traits and the emotions.

Building on Marston's work, Geier (1967) attempted to formulate a trait approach to leadership. He found that subjects used trait terminology to describe their own behavior traits as well as to describe the behavior and leadership style of others. He also discovered that subjects reported themselves in terms of behaviors they least exhibited. These findings were the basis for the Marcus Paul Placement Profile that discerned work behavior types from descriptions of traits which were most and least like the subject. Geier also developed an updated list of cluster traits (Figure 4).

Dominance	Compliance	Submission	Inducement
aggressiveness	adapting	accommodating	alluring
boldness	awe	admiration	appealing
courage	caution	"a good child"	attraction
dare-devilry	candor	altruism	"attractive personality"
determination	conforming	benevolence	captivation
ego centricity	well disciplined	considerate	charming
ego-emotion	empathy	docility	convincing
fighting instinct	fear	"being an easy mark"	converting
force of character	"getting down to brass tacks"	generosity	"inducing a person"
fury	harmony	gentleness	leading
high spirit	humility	good nature	"making an impression"
inferiority feeling	"oneness with nature"	"being manageable"	"personal magnetism"
initiative	open mindedness	meekness	persuasion
persistency	peace	obedience	seduction
rage	being a realist	obliging	"selling an idea"
self-assertion	resignation	slavishness	"selling oneself"
self-seeking	respect	sweetness	"winning a person's confidence"
stick-to-itiveness	"swimming with the stream"	tender heartedness	"winning a person's friendship"
stubbornness	timidity	"being tractable"	
superiority complex	tolerance	unselfishness	
unconquerableness	weak will	willing service	
will	yielding to	willingness	

Figure 3. Marston's clusters of traits for each primary emotion.

Dominance	Influencing (Inducement)	Steadiness (Submission)	Compliance
adventurous	admirable	accommodating	accurate
aggressive	affectionate	attentive	adaptable
argumentative	animated	cheerful	adherent
arrogant	attractive	companionable	agreeable
assertive	boastful	confidential	calculating
bold	charming	considerate	calm
brave	companionable	contented	cautious
competitive	confident	controlled	conformist
daring	convincing	deliberate	consistent
decisive	cordial	earnest	contemplative
defiant	energetic	easy mark	cultured
determined	expressive	even-tempered	devout
direct	fervent	friendly	diplomatic
eager	flexible	generous	easily-led
fearless	fluent	gentle	exacting
firm	good mixer	good-natured	fearful
force of character	high-spirited	gracious	fussy
forceful	inspiring	hospitable	God-fearing
inquisitive	jovial	kind	harmonious
inventive	joyful	lenient	humble
irritable	life of the party	loyal	logical
nervy	light-hearted	mild	objective
original	open-minded	moderate	obliging
outspoken	optimistic	modest	peaceful
persistent	persuasive	neighborly	precise
pioneering	playful	nonchalant	receptive
positive	polished	obedient	resigned
rebellious	popular	patient	respectful
restless	prideful	peaceful	soft-spoken
rigorous	proud	possessive	strict
self-reliant	responsive	reliant	systematic
stubborn	self-assured	sentimental	tactful
unconquerable	spirited	sympathetic	timid
vigorous	talkative	trustful	tolerant
will power	trusting	willing	well-disciplined

Geier, 1980
* Marston's (1928)original terms

Figure 4. Geier's (1979) list of cluster traits.

Geier clarified Marston's terminology and redefined Dominance as "active positive movement in an antagonistic environment" (Geier, 1979, p. 2). Compliance was "a cautious tentative response designated to reduce antagonistic factors in an unfavorable environment" (p. 2). Submission was defined as "passive aggressiveness in a favorable environment" (p. 2) and Inducement was "active positive movement in a favorable environment" (p. 2).

He also added the idea to the two-axis model that people with traits centered around the Dominance or Inducement dimension were process-oriented and wanted to shape the environment according to their own particular viewpoint. Individuals with traits centered around the Submission or Compliance dimensions were product-oriented and focused on the how and why of things and events.

Marcus Paul Placement Profile

Bauch (1981) used Marston's model and Geier's research to develop the Marcus Paul Placement Profile. This instrument was designed to identify work behavior types in order to match people to jobs. In the educational setting, it could provide a basis for counseling, career development, and selection. Organizations could use it for recruiting, job placement, training, and team building.

The intent of the MPPP was to increase understanding of work behaviors. Therefore, Bauch modified some of Marston's and Geier's terminology to remove any judgmental overtones from these terms. He replaced words with negative connotations with positive or neutral terms. In place of Marston's categories of Dominance, Inducement, Submission, and Compliance or Geier's Dominance, Influence, Steadiness,

and Compliance, Bauch described work behavior types as Energizer, Inducer, Concentrator, and Producer.

Bauch (1981) defined these work types as follows:

1. Energizer type workers actively engaged in getting results. They are assertive, impatient with detail, and desire direct answers and actions from associates. They are also creative and have many ideas for improving the work process (p. 16).

2. Inducer type workers involve others as they pursue objectives. They are sensitive to the needs of their associates and have optimistic attitudes as they influence others. They are good at using group processes to accomplish goals, being able to clarify ideas for themselves and others. They place more emphasis on people and interpersonal relations than on the organization (p. 16).

3. The Concentrator types can apply their skills in orderly ways resisting distractions. They are steady workers, and are loyal to the organization, showing great patience. They are systematic, effective, and help maintain moderation in these situations (p. 17).

4. Producers strive for quality as they carefully follow procedures, guidelines, or standards. They can support their decisions and actions with irrefutable documentation. Producers expect their directions but they can be relied on to meet their deadlines, follow orders and carry out their assignments with precision (p. 17).

Figure 5 presents the MPPP work behavior traits characteristic of each work behavior type. These traits are used in the MPPP in the form of 24 sets of forced choice items. In each set, subjects indicate which term is most descriptive of their work behavior and the term which least represents their work behavior.

A computer analysis of the responses generates the individual's work behavior profile in terms of one of the four major work behavior types. It also provides a more detailed description of the individual's strengths and tendencies by identifying one of 18 possible types. These descriptions reflect varying intensities of work behavior along

Energizer (Dominance)*	Inducer (Inducement)*	Concentrator (Submission)*	Producer (Compliance)*
aggressive	attracts people	accepting	accurate
bold	change agent	attentive	agreeable
certain	convincing	caring	careful
competitive	enthusiastic	committed	cautious
decisive	expressive	contented	compliant
demanding	friendly	considerate	conforming
determined	happy	diplomatic	contented
direct	hopeful	disciplined	devoted
dominant	inspiring	easy going	exacting
eager	playful	exacting	follows orders
forceful	personable	loyal	follows procedures
independent	persuader	orderly	governed
leader	popular	patient	logical
new ideas	respected	peaceful	precise
original	seeks new ideas	reasonable	resigned
outspoken	sociable	respectful	respectful
sure	talkative	satisfied	responsible
takes charge	team leader	sharing	systematic
venturesome		steady	thinker
vigorous		tolerant	
		trusting	
		understanding	

Bauch, 1981
* Marston's (1928) original terms

Figure 5. Bauch's (1981) list of work behavior traits.

the four major dimensions and the complex relationship between the dimensions. They also differentiate among individuals in the same category. In general, the profile describes the individual's style of interacting with others, ability to complete tasks, leadership potential, need for supervision, and preference for working in a technical or data-oriented position or in one that is people-oriented (Bauch, 1981).

Approximately 20% of the population are Energizers and about 20% are Inducers. Concentrators and Producers make up the remaining 60%. Although certain job descriptions or roles show preference for one specific type, most organizations work best with a combination of all types.

Using the MPPP, Glenn (1982) studied the relationship among work behavior type, personality function, job satisfaction, and effectiveness of vocational education administrators. She found that some work behavior types were significantly related to some personality functions as measured by the Myers-Briggs Type Indicator (MBTI). Although there was no significant relationship between overall job satisfaction and work behavior type, there was a significant relationship between work behavior type and specific areas of job satisfaction.

Energizers were satisfied by opportunities for promotion, volume of work, unanticipated job tasks, and recognition for accomplishments. Inducers were interested in the physical working conditions, volume of work, and section/division meetings. Concentrators indicated that opportunity for job promotion, volume of work, unanticipated job tasks, amount of supervision, and recognition for accomplishments were important to them. Producers listed physical working conditions,

communication with clients, and section/division meetings as important for their job satisfaction.

In summary, although there has been an urgent need to effectively match people to jobs, little research has been done on work behavior types. Many fields of study form the basis for an understanding and application of work behavior types. Industrial psychology has contributed selection methods and job analysis. Educational psychology has provided theories of vocational development and choice. Trait and type theories have provided a foundation for an instrument to measure work behavior type. Work behavior types may affect employee job satisfaction and turnover.

Job Satisfaction, Attrition, Work Behavior Type of Medical Technologists

This section will present an overview of literature on job satisfaction, attrition, career development, and work behavior type among medical technologists.

Since 1970, several authors have published studies on job satisfaction among laboratory personnel. Gerstenfeld and Whitt (1970) examined goal priorities of medical technologists. Medical technologists listed good working conditions as the number one priority, followed by challenging work and higher earnings. Supervision, administrative policies, schedules, available equipment, interaction among personnel, and the quality of work influenced good working conditions.

In a study of senior medical technology students, Karni and Husted (1970) reported that as students progressed through their rotations, they became more dissatisfied and discouraged. Students perceived a lack of recognition accorded to medical technologists by other health

professionals and the general public. Students also perceived a lack of identity for the profession of medical technology.

In 1971, Jeswald conducted an extensive study of job satisfaction among medical technologists. Using Maslow's theory of needs hierarchy, he found that medical technologists considered security and self-actualization needs as primary factors for job satisfaction, whereas the need for autonomy was least important. Jeswald's results also indicated that self-actualization and esteem were the least satisfied needs across all categories of laboratory personnel. Clinical practitioners consistently reported they felt lack of appreciation and recognition for their work.

Showery's (1976) survey of 300 medical technologists revealed that only 30.8% of those surveyed with more than 5 years experience indicated they would choose medical technology again if given the choice and 49.5% stated they were uncertain. The major reason offered by 83.5% of the subjects was lack of respect and recognition for laboratorians by other hospital personnel.

French and Rezler (1976) reported that clinical practitioners were less satisfied with their work, co-workers, and opportunities for advancement than medical technologists who were educators or administrators. All technologists were least satisfied with pay and promotion. Poor communication was a major source of frustration and dissatisfaction in all work settings. Most technologists found their work moderately stressful.

Matteson, Ivancewich and McMahon (1977) examined the relationship among medical technologists' needs, organizational practices, and job satisfaction. Their results suggested that job satisfaction was a

function of how well a job or organization met the individual's needs which, in turn, was a function of organizational practices or characteristics. Like Jeswald (1971), they found that attainment of higher order needs was strongly associated with job satisfaction. However, they were also the least satisfied needs. All subjects listed self-actualization as the least satisfied need. Security was the most satisfied need. The most important organizational practice related to satisfaction was coordination, the degree to which technologists were given necessary information. Yet, it was also the practice technologists found most dissatisfying.

While factors influencing job satisfaction were the same for administrative and nonadministrative technologists, administrators experienced higher levels of self-actualization, esteem, and autonomy. Satisfaction levels were also lowest in small hospitals and may be related to availability of modern technology in these facilities.

Love (1977) found that organizational stratification was related to job satisfaction. He defined stratification as "the degree of an organization's dispersion of power, prestige, monetary compensation, rewards, and other social resources to its members" (p. 1136). Of the 10 stratification-satisfaction relationships studied, the most significant was the inverse relationship between both social distance and authority distinction and satisfaction with supervision. Social distance was comparable to the dimension of the leadership behavior, consideration, discussed earlier in the job satisfaction text. Authority distinction is comparable to authoritarian leadership style. When social distance and authority distinction are high in an organization, there is less social interaction and support from

supervisors and fewer opportunities for autonomy. There was a significant positive relationship between authority distinction and satisfaction with work. The author concluded medical technologists preferred a cordial, supportive, well-structured work setting that permitted them an opportunity to participate in making decisions related to the goals, methods, and activities of their department.

The work of McMahan, Ivancewich, and Matteson (1977) confirmed the findings of several other authors. Comparing administrative to nonadministrative medical technologists, males to females, and hospital to nonhospital workers, they examined the relationship of organizational climate and job satisfaction. The organizational climate dimensions of thrust (refers to management's desire to motivate employees to accomplish the job through task oriented behavior), consideration and esprit most significantly related to need satisfaction among all categories of medical technologists.

Relating their interpersonal values to job satisfaction, Oliver (1978) found that medical technologists who valued independence and recognition were the least satisfied with their jobs. Those who valued benevolence (doing things for others) and conformity were more satisfied with their work. These findings are consistent with those of Love (1977), Karni and Husted (1970), Jeswald (1971), Showery (1976), and Matteson et al. (1977).

Harting and Oliver (1978) investigated the perceptions of bench-level and supervisory medical technologists regarding their work role and working conditions. The work role included the job itself, rewards, helping relationships, interpersonal relations, and recognition. Results were comparable to those found in earlier studies. All medical

technologists were least satisfied with recognition and rewards. They perceived few opportunities for advancement and little recognition or prestige associated with their work. Supervisors were generally more satisfied with their jobs than bench-level technologists.

Using the JDI, Broski and Cook (1978) determined job satisfaction levels for medical dietitians, physical therapists, occupational therapists, and medical technologists. All groups had significantly lower mean scores compared to national norms. However, dietitians reported the lowest satisfaction scores on all job facets except pay. Medical technologists followed dietitians with regard to overall satisfaction and were the most dissatisfied group on the pay subscale. All groups were equally dissatisfied with promotion opportunities.

In 1982, Broski, Manuselis, and Noga conducted a similar study and found that medical technologists had become the most dissatisfied group on four of the five subscales of the JDI. They were more satisfied than dietitians or occupational therapists on the supervision subscale and as equally satisfied as physical therapists. They also scored lower than the national sample on these same job facets. Many technologists provided supplementary comments that indicated they saw little opportunity for advancement, received inadequate pay to support a family, were overprepared for the tasks they performed, had limited authority, experienced high job stress,and perceived lack of respect and recognition from other health professionals.

Spencer (1982) attempted to determine the relationship between a sense of accomplishment on the job and career commitment and the relationship between sense of accomplishment and job satisfaction. His

findings also indicated intrinsic factors were important for job satisfaction and career commitment of medical technologists.

A recent study by Myers et al. (1982) related job dissatisfaction in medical technology to the acquisition of unrealistic expectations during clinical training. They claimed these expectations were later translated into unmet professional role expectations and were concentrated in the areas dealing with lack of upward mobility, respect from other health practitioners, poor pay, and job stress.

Rogers (1983) examined the problem of job stress as it related to job satisfaction in the hospital laboratory setting. She demonstrated that stress was significantly related to job dissatisfaction, with 78% of the highly stressed technologists in the sample also reporting high levels of job dissatisfaction. Stress stemmed from job pressure (workload and time pressure), job scope (having authority commensurate with responsibilities), and rapport with management.

Recent studies into the causes of job dissatisfaction among medical technologists have also addressed the related issue of the rising attrition rates among this group of laboratory workers. Medical technologists are not merely dissatisfied with their jobs, they are disenchanted with the profession of medical technology and are defecting to other professions.

Hajek and Blumberg (1982) surveyed 83 former medical technologists to determine their reasons for leaving medical technology. Although medical technology is dominated by women, the investigators found that 73% of the sample left the profession for nondomestic reasons. Job related factors, particularly those related to self-actualization, were cited as the principal causes of attrition. Participants expressed

disappointment and frustration with their work experiences in medical technology. While they had been highly trained for careers as responsible members of the health care team, they found themselves in "jobs," unrecognized and disregarded by other health care professionals as well as by the public. In addition, these jobs became routine, lacked challenge, were stressful, and provided little opportunity for advancement. In light of these results, the authors recommended re-evaluation of the medical technologist's role in health care, and creation of career ladders to permit advancement within the profession.

Based on the work of Hajek and Blumberg (1982), Irwin (1983) investigated the causes of dissatisfaction and attrition among medical technologists in New Jersey and obtained comparable results. Of the 115 participants, 66 (57%) indicated they would definitely leave medical technology within 5 years and 10% were undecided. The decision to continue in the field or go elsewhere was primarily related to self-actualization and esteem factors. Technologists who planned to leave felt overtrained and frustrated with their jobs because those with less training were performing the same tasks. They also found the work monotonous and had few opportunities to use their knowledge of laboratory medicine. In terms of esteem factors, they felt that they were invisible members of the health care team, received too little pay and recognition for their training and responsibilities, and that there was little prestige associated with being a medical technologist. Increased opportunities for career advancement and more attractive financial rewards were the major incentives cited by technologists that might encourage them to remain in the profession.

Inadequate career planning by students and incomplete selection criteria for program admission may, later, contribute to technologists' job dissatisfaction and turnover. Students may select medical technology as a career based on misinformation as to what the occupation actually involves and requires. Educators may select students into programs on the basis of criteria that do not relate to on-the-job performance.

In 1975, Holstrom surveyed freshman medical technology majors about the factors influencing them to select medical technology as a career. Students cited the availability of jobs, high earnings, a chance for career advancement, and prestige of the occupation as major reasons for choosing medical technology. Yet, earlier Jeswald (1971) and Karni and Husted (1970) reported that clinical practitioners felt medical technologists were not held in esteem and did not have opportunities for career advancement.

Zufall (1976) determined that the majority of medical technology students made a career choice based on information they had obtained from visiting hospital programs, talking to students enrolled in programs, writing to national sources, and visiting an employment site. Parents, friends, and health professionals were the most influential persons involved in student career decisions while counselors played a minor role.

Youse and Clark (1977) demonstrated that medical technology students had little understanding of the qualities and interests needed for medical technology and did not have accurate perceptions of what the profession entailed. These investigators developed a vocational competency test to find out how much entering students knew about

medical technology and how much their knowledge increased over time. After six months in clinical rotations, graduating seniors correctly answered only 71% of the general information questions about medical technology. Juniors answered 59% accurately and entering students had an accurate response rate of 42%. In response to a question about the most valuable trait for a medical technologist, 20% of the seniors, and 34% of the juniors responded, "Speed." Other responses were honesty, creativity, and high I.Q. Many students (12%) were unaware that technologists worked weekends and holidays in hospital laboratories. A majority of all levels of students stated they chose medical technology because they enjoyed science courses. They also cited job security as a major factor in selection.

Results suggested that selection of students earlier than the junior year could contribute to a high attrition rate and to a population of students poorly matched to the profession. At this stage students have little awareness of the major responsibilities of medical technology.

Gleich (1978) also demonstrated that preclinical medical technology students did not make a career choice based on knowledge of the work or the profession. Friends, family, and relatives were the leading sources of information about medical technology. Only 14% had worked as lab aides or clerks and only 2% had spoken to a practicing technologist about the field. Students ranked the type of work involved in medical technology as the leading factor influencing their career choice.

Choosing students for positions in medical technology programs may also be based on inadequate information about the student. During the 1970s, medical technology programs were popular among undergraduates.

At a time when graduates of other programs had limited employment opportunities, medical technology students were assured a job after graduation. As a result, medical technology programs had more applicants than available slots. Competition for slots was keen and criteria were established to select students who would most likely succeed in the program and thus graduate. Criteria included gradepoint average (GPA), key course grades, aptitude test scores, work records, volunteer service, recommendations, and personal interviews (Love, Holter & Krall, 1982).

Although research indicates that these selection criteria are valid measures for predicting academic success in the program (Eberfield & Love, 1970; Love et al., 1982; Lundgren, 1968), they do not adequately predict clinical or professional performance (Duntman, Anderson, & Barry, 1966). With the decrease in the numbers of applicants for medical technology programs and the high attrition rate among clinical practitioners, new selection criteria may be in order. Students who have lower academic credentials may demonstrate other essential traits for success in medical technology.

Information about the work behavior traits of satisfied clinical practitioners would be useful in career planning, job counseling, and student placement. Although research on the work behavior types of medical technologists is nonexistent, the existing literature suggests that certain traits and types are related to success and satisfaction in this occupation.

French and Rezler (1976) found a higher proportion of sensing people among medical technologists who were in clinical practice but a higher percentage of intuitive types among educators and administrators.

In an earlier study, Rezler and French (1975) found more intuitive, feeling, and perceiving types among medical technology students. The authors hypothesized these types of students left medical technology before entering practice or shortly thereafter because they were disappointed with the actual work situation.

Williams (1975) stated that "the prospective medical technology student should possess manual and finger dexterity, must be able to accept responsibility, and have intellectual integrity, a high degree of persistence, and a high capacity for patient, thorough effort" (p. 36). She added they should also like people.

Oliver (1978) determined that medical technologists who valued independence and recognition were least satisfied with their jobs. Those interested in doing things for others and valuing conformity were most satisfied.

In conclusion, medical technologists, like other workers, bring expectations, needs, values, goals, skills, abilities, interests, motivation, and personality traits to the work setting. These factors determine the work behavior type of the individual technologist. When the work behavior type is consistent with the demands and requirements of the job, the individual is more likely to experience job satisfaction and remain in the profession. Students, educators, and employers need more information on work behavior types to make adequate career, selection, and placement decisions.

CHAPTER III
DESIGN AND METHODOLOGY

This chapter includes the design and methodology of the study. In it are the research design, population, description, data collection, instrumentation, and data analysis procedures.

Design

The investigator used a descriptive research design to investigate job satisfaction, work behavior type, attrition, and demographic characteristics of practicing and former medical technologists in the state of Florida. Specifically, she sought answers to the following questions:

1. What are the work behavior types of medical technologists in Florida?
2. Does a relationship exist between the work behavior type of the technologist and overall job satisfaction?
3. Does a relationship exist between work behavior type and specific aspects of job satisfaction?
4. Do participants' work behavior types relate to attrition or the intention to leave medical technology?
5. Do medical technologists working in hospital laboratories differ from those working in nonhospital laboratories or other fields in overall job satisfaction?
6. Do medical technologists working in hospital laboratories differ on specific aspects of job satisfaction from those working in nonhospital laboratories or other fields?
7. Does a relationship exist between the sex of the participant and job satisfaction?

8. Does a relationship exist between the sex of the participant and attrition or the intention to leave medical technology?

9. Can some combination of demographic variables, work behavior type, and job satisfaction predict attrition among medical technologists.

Population

The sample population consisted of two groups of medical technologists. Practicing medical technologists employed in various laboratory settings (hospitals, clinics, private laboratories, blood banks, reference laboratories) located in a Florida community comprised the first group. These were bench-level technologists, primarily responsible for performing the technical work in the laboratory. All technologists holding a bachelor's degree were invited to participate. Supervisory technologists, educators, and medical technicians were excluded to assure homogeneity of the sample.

The second group included former medical technologists, currently employed in occupations other than medical technology. The investigator selected these participants from business contacts, former employees, and lists of University of Florida medical technology graduates from the past 5 years who lived in the community.

Data Collection

The researchers mailed a letter to the chief technologist, or administrator at each facility (see Appendix A). The letter contained an explanation of the purpose of the project and a request for participation by the staff of the facility. Willingness to participate in the study was determined by a followup telephone call. At that time, the researcher also ascertained the number of technologists employed at

the facility and made an appointment to deliver questionnaires to a contact person. The contact person served as a coordinator to distribute and collect the materials. The investigator returned on a specified date to collect the completed packets. When it was more convenient to mail materials to a participating facility, the researcher enclosed a stamped, addressed envelope with a request that subjects return completed packets by a specified date. She telephoned nonrespondents after 7 days.

The investigator gave volunteers a packet of instruments (see Appendix B) to complete and a cover letter (see Appendix C) explaining the purpose and importance of the study. Instruments were numerically coded to eliminate personal identification but to permit correlation of responses. Participants were instructed, however, to put their names on the MPPP if they wanted an assessment of their work behavior type.

The investigator sent a copy of the instruments and a cover letter (see Appendix D) to former medical technologists. She instructed them to return the completed questionnaires in the enclosed stamped, addressed envelope by December 15, 1983. After 7 days, she telephoned nonrespondents or individuals who did not complete all instruments.

Of the seven hospitals and nine nonhospital laboratories the investigator contacted, six hospitals and eight nonhospital facilities agreed to participate. Table 1 shows the number of questionnaires distributed to each group of technologists. Hospitals are listed individually. Responses for nonhospital technologists are pooled because each facility only employed up to three technologists. The

Table 1. Response rate on questionnaire by group of respondents.

Group	No. Questionnaires Distributed	No. Useable Questionnaires Returned	Percent Returned
Hospital Technologists			
1	13	8	62
2	20	10	50
3	48	12	25
4	28	26	93
5	15	14	93
6	10	10	100
TOTAL	134	80	60
Nonhospital Technologists	20	12	60
Former Technologists	29	19	66
GRAND TOTAL	183	111	61

table also contains the number of useable questionnaires returned by each group of technologists and the percentage returned.

The percentage of questionnaires returned by hospital respondents ranged from 25% to 100% for an overall response of 60%. Nonhospital respondents returned 60% of the questionnaires and former medical technologists contacted returned 66% of the questionnaires. Nonuseable packets returned from all groups totaled 19. These respondents either failed to meet the education requirements for inclusion in the study or did not complete all instruments. Efforts to retrieve missing data were unsuccessful. The final population consisted of 111 technologists--80 from hospitals, 12 from nonhospital facilities, and 19 former technologists. The overall response rate was 61%.

Instrumentation

Job Descriptive Index

Job satisfaction was assessed by the Job Description Index (JDI) developed by Smith, Kendall, and Hulin (1969). The JDI is the most reliable and valid measure of job satisfaction currently available (Bass & Barrett, 1974; Crites, 1969; Gruneberg, 1979; Vroom, 1964). The JDI contains 72 items measuring satisfaction with five facets of the job: the work itself (18 items), supervision (18 items), pay (9 items), promotion (9 items), and co-workers (18 items). Smith and co-workers derived these items by performing factor analyses on numerous job satisfaction inventories available at the time of their study.

The items are descriptive adjectives or short phrases arranged in a checklist form. The 72 items are approximately half favorable and half unfavorable items. The JDI does not directly ask respondents how satisfied they are with their work. The instrument contains a provision for respondents to describe their work. However, in describing their jobs, they provide information that may be used to infer satisfaction. Some items include evaluative words and others describe objective features of the job.

Respondents mark a "Y" for yes next to the item if it describes their job, "N" for no if it does not describe their job, and "?" if they are undecided. Smith et al. selected the checklist format with short descriptive phrases to permit administration of the questionnaire across a variety of educational levels and jobs.

Values are assigned to responses and scores are derived from a scoring key by adding the values for items in each subscale. A yes

response to a negative item and a no response to a positive item receive a zero. A yes response to a positive item and a no response to a negative item receive three points. An indecision receives one point. Smith et al. found that the "?" response was more indicative of dissatisfaction than satisfaction and assigned the "?" response a weight of one instead of two. The maximum score for each JDI subscale is 54. Scores for the nine-item scales are doubled to achieve an equivalence of total points and ranges. In addition to subscale scores, the JDI also generates an overall index of job satisfaction by adding the subscale scores for a total score. A score of 18 on a subscale signifies indifference (all items answered with a question mark) and a score of 27 indicates a balanced attitude toward a job facet.

The JDI has internal consistency coefficients, corrected by the Spearman-Brown formula, in the .80s. The coefficients of reliability for the five subscales are: work (a = .79), supervision (a = .85), co-workers (a = .88), pay (a = .81), and promotion (a = .79) (Smith et al., 1969). Crites (1969) determined that scale ordering did not affect scores. Schneider and Dachler (1978) stated that the JDI had retest reliability of .57 after a 16-month interval.

Marcus Paul Placement Profile

The Marcus Paul Placement Profile (MPPP) describes work behavior patterns of people under normal working conditions. These patterns are stable over time as long as the work environment is stable. Although individuals exhibit all patterns to some degree, one pattern of behavior predominates.

A computer program developed to score the instrument analyzes the subject's responses and designates the predominant work behavior type.

The program will also generate a subtype based on the strength and interaction of responses on the other work dimensions. The subject's scores on each work behavior dimension are printed on a graph. Scores range from -15 to 15. The major work behavior type will have the highest score. The historical background and other details of the MPPP were described in Chapter II.

In order to obtain validity data on the MPPP, Gene Wiggington (personal communication, February 10, 1984) administered a questionnaire to 96 students who had taken the MPPP as part of a career education course. The single-item questionnaire follows:

Please check the statement that is most accurate for you.

1. Both paragraphs of the Placement Profile are a fairly accurate description of my work behavior.

2. The first paragraph of the Placement Profile is a fairly accurate description of my work behavior; the second paragraph is not.

3. The second paragraph of the Placement Profile is a fairly accurate description of my work behavior; the first is not.

4. My Placement Profile is not a very accurate description of my work behavior.

A total of 85 students (88.6%) indicated that both paragraphs of the MPPP accurately described their work behavior. Seven (7.3%) responded to the second choice, 3 (3.1%) to the third choice, and only one student (1%) indicated the MPPP was not an accurate description of that person's work behavior.

The MPPP requires less than 10 minutes to complete. The items are written to make the instrument useful for a variety of educational backgrounds. Test-retest reliability is about 98% (J. Nickens, personal communication, November, 1983).

Questionnaires for Practicing and Former Medical Technologists

The investigator developed two closed-form questionnaires to collect demographic data and career information from practicing and former medical technologists. Based on previous research, the questionnaire for practicing technologists included items to measure perceived existence of alternative careers (Mobley et al., 1978; Mobley et al., 1979; Steers & Mowday, 1981), intention to search for alternative careers (Mobley, 1977; Mobley et al., 1978), met expectations (Muchinsky & Tuttle, 1979; Porter & Steers, 1973), and intention to leave (Mobley, 1982; Mobley et al., 1979). Behavioral intention to leave is the immediate precursor to turnover and may be assessed by a single-item measure of intention (Kraut, 1975; Waters et al., 1976).

Data Treatment and Analysis

The researcher scored the JDI manually according to the key described by Smith et al. (1969). She derived five subscores and a total score for each participant.

A computer program developed by Marcus Paul Computer Systems was used to score the MPPP. Subjects' responses to the 24 frames are entered into the computer. The program generated a score for each work behavior type and denoted the major work behavior type and subtype for each subject. Scores were rounded off to the nearest half-point for statistical analyses.

The researcher entered data from the Profile, Index, and demographic questionnaire directly into the computer terminal. After printing and checking these entries for accuracy, she used the Statistical Analysis System (SAS) with appropriate subprograms to answer the research questions.

The program generated frequencies and means to determine the work behavior types of medical technologists. Analysis of variance (ANOVA) showed the relationships between work behavior type and overall job satisfaction or specific aspects of job satisfaction. Tukey's test of Honestly Significant Differences was used to make pairwise comparisons between groups. This test controls for the Type I error rate. The relationship between work environment and job satisfaction was also tested by ANOVA and Tukey's test. The chi-square test assessed the relationship between intention to leave medical technology, sex, and work behavior type. Sex differences on total JDI scores were determined by the *t* test. Stepwise discriminant analysis was performed to see which combinations of variables, if any, would be the best predictors of attrition. Significance for all tests was determined at the .05 confidence level.

CHAPTER IV
RESULTS

This section contains results of the study and provides answers to the research questions posed in Chapter III. The first section describes the sample population and contains analyses of data relevant to each question.

Description of Population

Practicing Medical Technologists

Table 2 summarizes the data on practicing technologists obtained from the demographic questionnaire. The majority of the subjects were females (N = 72, 78.3%). More than 60% had practiced medical technology for more than 5 years and most (56.5%) worked in large (more than 400 beds), teaching hospitals.

When asked about their future in medical technology, 32.6% of the respondents expected to leave and 22.8% were uncertain. Furthermore, 22.8% indicated they would most likely leave within the next year. More than three fourths of the subjects (77.2%) felt it would be easy for them to find other jobs.

Medical technology met the professional expectations of three fourths (76.1%) of the sample. However, only one third indicated that, if they had it to do again, they would select medical technology as a career.

Fewer than one half (48.9%) of those surveyed felt they had received adequate career information to make an informed choice about

Table 2. Characteristics of practicing medical technologists.

Characteristics	N	Percent
A. Sex		
1. Male	20	21.7
2. Female	72	78.3
B. Age		
1. Under 25 years	9	9.8
2. 25-35	59	64.2
3. 36-45	15	16.3
4. 46-55	5	5.4
5. Over 55 years	4	4.3
C. Years at current job		
1. Less than 1 year	20	21.7
2. Between 1 and 3 years	22	23.9
3. Between 3 and 5 years	26	28.3
4. Between 5 and 10 years	15	16.3
5. More than 10 years	9	9.8
D. Total years of experience		
1. Less than 1 year	3	3.3
2. Between 1 and 3 years	15	16.3
3. Between 3 and 5 years	13	14.1
4. Between 5 and 10 years	25	27.2
5. More than 10 years	36	39.1
E. Work setting		
1. Hospital		
a) small (fewer than 200 beds)	8	8.7
b) medium (200-400 beds)	20	21.7
c) large (more than 400 beds)	52	56.5
2. Private laboratory	3	3.3
3. Blood bank	3	3.3
4. Research laboratory	1	1.1
5. Clinic	5	5.4
F. Future in medical technology		
1. Definitely will not leave	14	15.2
2. Probably will not leave	27	29.4
3. Uncertain	21	22.8
4. Probably will leave	23	25.0
5. Definitely will leave	7	7.6
G. Perceived ease of finding an alternative job		
1. Very easy	24	26.1
2. Fairly easy	47	51.1
3. Not easy at all	12	13.0
4. Uncertain	9	9.8

Table 2 (continued)

Characteristic	N	Percent
H. Likelihood of leaving medical technology within a year		
1. Highly likely	12	13.0
2. Most likely	9	9.8
3. Not likely	58	63.0
4. Uncertain	13	14.2
I. Met expectations of the profession		
1. Exceeded expectations	2	2.2
2. Met expectations	33	35.9
3. Somewhat met expectations	35	38.0
4. Did not meet expectations	22	23.9
J. Would choose medical technology again as a career		
1. Would choose again	30	33.0
2. Would choose again with reservations	6	6.6
3. Probably would not choose again	35	38.4
4. Definitely would not choose again	20	22.0
K. Adequate career information to choose medical technology		
1. More than adequate	15	16.3
2. Adequate	30	32.6
3. Some information but more needed	38	41.3
4. Very little	9	9.8
L. Perceived usefulness of work behavior characteristics in career decision making		
1. Very helpful	34	37.4
2. Probably helpful	34	37.4
3. Would not help	15	16.4
4. Uncertain	8	8.8

entering medical technology. A total of 68 technologists (74.8%) felt that information about work behavior types would have been helpful in career decision making.

Former Medical Technologists

Table 3 contains the demographic data for former medical technologists. Of the 19 former technologists surveyed, 10 (52.6%)

Table 3. Characteristics of former medical technologists.

Characteristics	N	Percent
A. Sex		
1. Male	10	52.6
2. Female	9	47.4
B. Age		
1. Under 25 years	1	5.3
2. 25-35	8	42.0
3. 36-45	9	47.4
4. 46-55	1	5.3
5. Over 55 years	0	0
C. Years since practicing medical technology		
1. Less than 1 year	1	5.3
2. Between 1 and 3 years	6	31.6
3. Between 3 and 5 years	6	31.6
4. Between 5 and 10 years	5	26.2
5. More than 10 years	1	5.3
D. Total years experience as a medical technologist		
1. Less than 1 year	0	0
2. Between 1 and 3 years	4	21.1
3. Between 3 and 5 years	4	21.1
4. Between 5 and 10 years	6	31.6
5. More than 10 years	5	26.2
E. Present profession		
1. Physician's assistant	2	10.5
2. Sales representative (health related)	9	47.3
3. Biomedical engineer	2	10.5
4. Hospital administrator	1	5.3
5. Chef	1	5.3
6. Small business owner (electronics)	1	5.3
7. Technical rep. (health related)	2	10.5
8. Pathology resident	1	5.3
F. Would recommend medical technology to others		
1. Would strongly recommend it	4	21.1
2. Would recommend it with reservation	4	63.1
3. Would probably recommend it	2	10.5
4. Would strongly advise against it	1	5.3
G. Adequate career information to choose medical technology		
1. More than adequate	3	15.8
2. Adequate	6	31.6
3. Some information but more needed	8	42.1
4. Very little	2	10.5

Table 3 (continued)

Characteristics	N	Percent
H. Would return to medical technology		
1. Yes	4	21.1
2. No	10	52.6
3. Uncertain	5	26.3

were males. More than half the subjects (52.7%) were over 35 years, and 57.9% had practiced as medical technologists more than 5 years.

Former technologists worked in a variety of occupations. Only two, however, worked in nonhealth related fields (chef, electronics business owner). The majority (68.5%) had left medical technology less than 5 years ago.

When asked if they would return to medical technology, 52.6% of the subjects responded "NO" and 26.3% were uncertain. The majority (63.1%) would recommend the field to others. More than half the respondents (52.6%) indicated they had received little or insufficient information about medical technology before making a decision to enter this field.

Table 4 contains a comparison of medical technologists' responses to items asking them to list, in order of importance, the five factors that influenced them to enter medical technology and the five factors most influential in their decision to leave. Practicing technologists ranked interest in science and medicine, desire to help the sick, job opportunities, security, and expected salary as major reasons for selecting medical technology as a career. Former medical technologists listed interest in science and medicine, desire to help the sick, availability of an educational program, job opportunities, and security.

Table 4. Comparison of the five major factors influencing medical technologists in selecting, leaving, or intending to leave medical technology.

Group	Factor rank	Selection factors	"Intention"/Attrition factors
Practicing Technologists	1	Interest in science and medicine	Lack of career advancement
	2	Desire to help the sick	Inadequate salary
	3	Job opportunities	Routine nature of work
	4	Job security	Stressful nature of work
	5	Expected salary	Lack of status and recognition
Former Technologists	1	Interest in science and medicine	Lack of career advancement
	2	Desire to help the sick	Inadequate salary
	3	Availability of educational program	Lack of status and recognition
	4	Job opportunities	Stressful nature of work
	5	Job security	Routine nature of work

Reasons for leaving or intending to leave the field were the same for both groups of technologists. In order of importance, former medical technologists left for the following reasons: lack of career advancement, inadequate salary, lack of status and recognition, stressful nature of work, and routine nature of work. Practicing technologists also ranked lack of career advancement and inadequate salary as the two major factors for desiring to leave followed by the routine nature of work, stressful nature of work, and lack of status and recognition.

Technologists' responses in this study were comparable to those reported by previous researchers. Showery (1976) reported that only

30.8% of the technologists in his survey would choose medical technology again if given the choice. Irwin (1983) found that 57% of the participants in her study definitely planned to leave medical technology within 5 years and 10% were undecided. Reports of inadequate career information are consistent with studies by Youse and Clark (1977) and Gleich (1978).

Holstrom (1975) and Koneman (1982) also reported that medical technologists chose this field because they desired to help people, had an interest in science and medicine, saw a potential for advancement and financial rewards, and felt it offered security. Technologists in studies by Hajek and Blumberg (1982), Irwin (1983), Miller (1982), Myers et al. (1982), Rogers (1983), and Showery (1976) cited the same reasons for leaving or intending to leave medical technology as the subjects in this study: lack of recognition, poor pay, no upward mobility, job stress, and boredom (from over specialization and mechanization).

Research Questions

Question 1: What are the work behavior types of medical technologists in Florida? Table 5 contains the frequencies and percentages of work behavior types among practicing and former medical technologists. Of the 92 practicing technologists, 55 (59.8%) were Producers. Almost a third (32.6%) were Concentrators. Only four (4.3%) and three (3.3%) of those surveyed were Energizers and Inducers respectively.

The most common work behavior type among former technologists was the Concentrator type (36.8%). More than one fourth (26.3%) were Inducers.

Table 5. Work behavior types of medical technologists.

Type	Practicing technologists N	Practicing technologists Percent	Former technologists N	Former technologists Percent	Total N	Total Percent
Energizer	4	4.3	4	21.1	8	7.2
Inducer	3	3.3	5	26.3	8	7.2
Concentrator	30	32.6	7	36.8	37	33.3
Producer	55	59.8	3	15.8	58	52.3

Of the remaining seven subjects, four (21.1%) were Energizers and three (15.8%) were Producers.

Overall, the majority (52.3%) of technologists in the study were Producers. One third (33.3%) were Concentrators and the remaining subjects were equally divided between Energizer (7.2%) and Inducer types (7.2%).

Concentrators and Producers work to maintain the organization in its present form. They can be counted on to do the job and follow the rules and regulations of the organization. Energizers and Inducers seek to alter the system and effect change in the organization. Chapter II contains detailed descriptions of the types.

Medical technology contains a higher proportion of Producers and Concentrators than occurs in the general population. Approximately 60% of the general population are either Producers or Concentrators, with Producers predominating. Energizers and Inducers represent an additional 20% each (Bauch, 1981). The proportion of work behavior types among former technologists, however, approximates these figures more closely than the proportions of work behavior types among practicing technologists.

Table 6 contains the means and standard deviations for scores of work behavior types on each dimension of the Profile. Compared to Energizers and Inducers, Producers and Concentrators scored high on their respective scales. Producers had a mean score of 9.68. The mean score for Concentrators was 8.12. Energizers and Inducers scored an average of 3.63 and 4.81 respectively. As mentioned in Chapter III, scores on the MPPP can range from -15 to 15 with zero as the mean score.

Producers' scores on the other dimensions indicate they also scored high on the Concentrator scale ($\bar{x}$ = 4.49) and low on the Inducer and Energizer scales. Concentrators scored high on the Producer scale ($\bar{x}$ = 3.34) and also scored low on the Energizer and Inducer scales. Although not high, Energizers' second strongest scores were on the Producer dimension ($\bar{x}$ = -.75). For Inducers, the Concentrator dimension had the second highest mean score ($\bar{x}$ = 1.38).

Table 6. Mean scores and standard deviations for each work behavior type on each work dimension.

Type		Work Behavior Dimension			
		Energizer	Inducer	Concentrator	Producer
Energizer	$\bar{x}$	3.63	-2.81	-0.13	- .75
	SD	1.33	5.49	2.39	3.19
Inducer	$\bar{x}$	.50	4.81	1.38	-2.88
	SD	3.89	0.59	3.09	4.50
Concentrator	$\bar{x}$	-5.05	-3.08	8.12	3.34
	SD	4.46	4.23	2.82	3.72
Producer	$\bar{x}$	-3.83	-5.41	4.49	9.68
	SD	4.64	4.14	3.61	2.74

As discussed in Chapter II, the MPPP generates, in addition to one of the four major work behavior types, a more detailed description of an individual's work behavior. This "subtype" is based on the interactions among all choices and the strength of the individual's responses on each dimension of work behavior.

Almost two thirds (65%) of practicing technologists fell into three subtypes. Descriptions of these types are as follows:

> Type 9 has characteristics of the worker types who apply their skills in nonthreatening situations. They will cautiously follow procedures and rules. They are committed to doing the job correctly, and try hard to be prepared to do their best. They like predictable work environments where their jobs are clearly defined, but will enthusiastically accept new assignments if the assignments are in their area of expertise. They will take the time to be sure they understand exactly what is desired of them, get the facts relating to the assignment, and if they make a commitment, they produce accordingly. An important value to the organization is the precision and quality of their work and their personal identity with their product. (Bauch, 1981, p. 23)

> Type 11 has traits of perfectionist workers. These individuals follow directions exactly and strive for flawless products. When procedures and deadlines are clear and specific, they attend to all the detail and quality work. Thus, no backing up or correcting will be needed. They ask for clarification frequently to make sure things are being done right. They can explain the rules and operating procedures to the new employee as well as the author. They accept the system without great concern about why and do not require intensive supervision once the job is described. They are noted for dependability in completing work when expected and doing their best to attain quality. (Bauch, 1981, p. 24)

> Type 16 has characteristics of the specialist group. These people are noted for good planning and persistence on the job over long periods. They are quite accepting of the varieties of styles of co-workers but will maintain a small group of good friends. They like consistency in their work environment as they value the tried and proven methods. They establish a steady pace and follow it with or without supervision. They appreciate recognition for their staying at the job until it is done. (Bauch, 1981, p. 27)

Subtypes of the former medical technologists were heterogeneous. No one type predominated.

These findings on work behavior types among medical technologists are consistent with results of personality types reported by other researchers. Bowling (1973) determined that 57% of the medical technologists in her sample had a strong preference for the sensing-judging dimensions on the Myers Briggs Type Indicator (MBTI). They were predominately introvert-sensing-thinking-judging (ISTJ), extravert-sensing-thinking-judging (ESTJ), or introvert-sensing-feeling-judging (ISFJ) types.

Fellers (1974), French and Rezler (1976), Hill (1974), and Rezler and French (1975) also reported that medical technologists preferred sensing, thinking, and judging. About 20% of the clinical practitioners in the French-Rezler (1976) study were ISTJ or ESTJ types.

Compared to practicing technologists, student technologists were more intuitive, feeling, and perceiving (Rezler & French, 1975; Williams, 1974). French and Rezler (1976) speculated these types found working conditions disappointing and left medical technology before or shortly after entering the field.

Glenn's (1982) research demonstrated significant relationships between personality functions measured on the MBTI and work behavior types measured by the MPPP. She found significant correlations between the Producer type work behavior and the introvert ($r = .35$), sensing ($r = .48$), and judging ($r = -.36$) scores on the MBTI. Producers who are exacting in their work were also introverts, prefering the sensing and judging modes.

Bauch's description of Producers (presented in Chapter II) and Myers' (1976) description of the introvert-sensing-judging type are very similar. According to Myers, the introvert-sensing-judging types are those who

> like quiet for concentration, tend to be careful with details, and seldom make errors of fact. They tend not to mind working on one project for a long time uninterruptedly, and like to think a lot before they act, sometimes without acting. They are patient with routine details, and tend to be good at precise work. They are at their best when they plan their work and follow their plan. (pp. 17-18)

Glenn also reported that Concentrators were most likely to be sensing and judging, introverted or extraverted, with a preference for the feeling function. Energizer scores correlated significantly with the intuitive and thinking personality functions. Inducer scores, as expected, correlated with the extravert, intuitive, and perceptive personality functions.

In light of these studies on personality types among medical technologists and correlations of personality type to work behavior type, it is not surprising, then, to find the high proportion of Producers and low proportion of Energizers and Inducers among medical technologists. Producers have the qualities required and desired for medical technology. They carefully follow procedures and strive for precision. The subtypes of medical technologists also reflect essential work behavior characteristics for this field. In addition to producing precise, quality work and following directions, these subtypes complete the work on time with little supervision.

As a bench-level technologist, the Inducer would not have many opportunities for contacts with fellow workers or patients.

The Energizer would find few outlets for new ideas, solving problems, or bringing about change. However, Energizers and Inducers would probably find avenues for expressing their work behavior traits as administrative or teaching technologists.

Former technologists work in a variety of occupations. Therefore, it is reasonable to find that the proportions of work behavior types among this group approximate those of the general population.

Question 2: Does a relationship exist between the work behavior type of the technologist and overall job satisfaction? The researcher used a one-way analysis of variance (ANOVA) to answer this question. The findings are reported in a summary table (Table 7). A significant relationship occurred between work behavior type and the overall job satisfaction score of the subject.

The investigator used Tukey's test of Honestly Significant Differences (HSD) to determine the source of variance between the work behavior types. The mean scores of Inducers differed significantly from scores of Producers and indicated higher levels of overall job satisfaction. There were no significant differences among the total JDI scores of the other work behavior types.

Glenn (1982) found no significant relationship between overall job satisfaction, measured by a Job Satisfaction Questionnaire, and work behavior types of vocational education administrators. French and Rezler (1976) could not correlate overall job satisfaction with personality type among medical technologists. Williams (1976), however, determined that medical technologists with introvert personality types as measured by the MBTI were, in general, less satisfied with their

Table 7. Analysis of variance results for JDI scores by work behavior type.

Total JDI Scores

Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	3	17,657.32	5,885.77	3.44	.02*
Within Groups	107	182,868.92	1,709.06		

$\bar{x}$	Group
145.71	(4) Producer
162.16	(3) Concentrator
166.375	(1) Energizer
190.00*	(2) Inducer

(2 was different from 4, but not from 1 or 3)

Work Subscale of JDI

Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	3	671.30	223.77	2.26	.09
Within Groups	107	10,602.97	99.09		

$\bar{x}$	Group
28.79	(4) Producer
32.38	(3) Concentrator
33.88	(1) Energizer
36.63	(2) Inducer

Promotion Subscale of JDI

Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	3	2,855.11	951.70	5.21	.002*
Within Groups	107	19,557.00	182.78		

$\bar{x}$	Group
9.12	(4) Producer
13.97	(3) Concentrator
16.00	(1) Energizer
28.38*	(2) Inducer

(2 was different from 3 and 4, but not from 1)

Pay Subscale of JDI

Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	3	1,832.02	610.67	2.88	.04*
Within Groups	107	22,667.56	211.85		

$\bar{x}$	Group
21.47	(4) Producer
25.92	(3) Concentrator
32.12	(2) Inducer
34.25	(1) Energizer

Table 7 (continued)

Source	df	Supervision Subscale of JDI Sum of squares	Mean square	F ratio	F prob.
Between Groups	3	67.89	22.63	0.16	.92
Within Groups	107	75,401.14	143.94		

$\bar{x}$	Group
42.62	(2) Inducers
43.29	(4) Producers
44.51	(3) Concentrators
45.50	(1) Energizers

Source	df	Co-worker Subscale of JDI Sum of squares	Mean square	F ratio	F prob.
Between Groups	3	980.94	326.98	2.44	.07
Within Groups	107	14,360.03	134.21		

$\bar{x}$	Group
36.75	(1) Energizers
42.98	(4) Producers
46.19	(3) Concentrators
50.38	(2) Inducers

*p<.05

jobs than extraverted technologists. Brown's (1973) findings for occupational therapists were similar.

In this study, Inducers may have indicated higher levels of overall job satisfaction because they are predominantly extraverts. Characteristically, Inducers and extraverts reflect a more optimistic outlook and place more importance on people and interpersonal relationships than on the organization or job.

Question 3: Does a relationship exist between work behavior type and specific aspects of job satisfaction? A series of one-way ANOVAs between subjects' scores on the subscales of the JDI and work behavior types provided the answers for this question.

As shown in Table 7, F ratios were significant on the pay and promotion scales. Tukey's test indicated that Inducers were more

satisfied with promotions than Concentrators and Producers. Tukey's test, however, failed to reveal significant differences among the work behavior types on the pay scale.

In Glenn's (1982) study, Energizers' scores correlated with opportunity for promotion and recognition for accomplishment. This work behavior type also enjoyed the challenge of large volumes of work and unanticipated job tasks. Inducers were satisfied by physical working conditions that allowed contact with fellow workers, a work volume that allowed time for interactions with others, and participation in meetings. Concentrators cited opportunities for promotion, minimal amounts of supervision, and recognition for accomplishments as job satisfiers. They did not enjoy large volumes of work or unanticipated tasks because these factors might hinder them in meeting deadlines and planning their work. Producers favored secure and secluded physical working conditions. They also enjoyed attending meetings in order to obtain information and guidelines to help them plan and carry out their work assignments.

According to French and Rezler (1976), the relationships between personality type and specific aspects of job satisfaction among medical technologists were questionable. Introverted administrators were more satisfied with pay than extraverted administrators, whereas extraverted educators were more satisfied with working conditions than introverts.

Williams (1976) concluded that extravert medical technologists were less satisfied with promotions than introverts. Feeling types were more satisfied with pay and co-workers than thinking types.

Clitsome (1975) reported a difference in work satisfaction scores among general staff nurses of the sensing-thinking-judging type.

However, intensive care nurses who were judging types were more satisfied than perceptive types.

Except for promotions, results of this study indicate that work behavior type does not relate to medical technologists' satisfaction with specific aspects of the job. These findings may, in part, relate to the design of the instrument used to measure job satisfaction. Although the JDI is regarded as the most reliable measure of job satisfaction, it may not be sensitive to differences among work behavior types. The specific items in each subscale might be more revealing. For example, on the work subscale, Concentrators would probably consider routine work as satisfying. Yet, a Yes response to this item receives a score of zero.

Question 4: Do participants' work behavior types relate to attrition or the intention to leave medical technology. The investigator used a chi-square test to compare responses of the four work behavior types to an intention to leave item (question 10) on the demographic questionnaire. In order to increase the expected cell frequencies, data for former technologists were combined with data for individuals who definitely intended to leave within a year (response 1).

In Table 8, the chi-square results indicate a significant relationship between work behavior type and intention to leave medical technology or attrition. However, these results must be viewed cautiously. Although two groups of respondents were combined to increase the expected cell frequencies, more than 20% of the cells were empty or had expected frequencies of less than 5. When this situation occurs in a contingency table, results may be overestimated and the validity of the analysis is weakened. The small numbers of

Table 8. Relationship between work behavior type and attrition.

Group		Definitely intend to leave	Probably will leave	Will not leave	Uncertain	Total
Energizers	N	5	0	2	1	8
	%	4.50	0	1.8	.90	7.21
Inducers	N	6	1	1	0	8
	%	5.41	.90	.90	0	7.21
Concentrators	N	11	2	21	3	37
	%	9.91	1.80	18.92	2.70	33.33
Producers	N	9	6	34	9	58
	%	8.11	5.41	30.63	8.11	52.25
Total	N	31	9	58	13	111
	%	27.93	8.11	52.25	11.71	100

$\chi^2 = 20.76$

df = 9

χ^2 Prob = .02

Inducers and Energizers in the sample contributed to low frequencies in some of the cells.

Based on the statistical analysis, it is difficult to answer a question about work behavior type and attrition among medical technologists. However, the following attrition rates were observed for each work behavior type among the 40 technologists who left or indicated they would probably leave the field within the next year: Energizers (N = 5, 62.5%), Inducers (N = 7, 87.5%), Concentrators (N = 13, 35.1%), Producers (N = 15, 25.9%).

The higher attrition rates of Energizers and Inducers appear consistent with the lower proportions of these types among medical technologists. Not only may fewer Energizers and Inducers be attracted

to medical technology, but those who do enter the field may leave at higher rates than Concentrators and Producers.

Question 5: Do medical technologists working in hospital laboratories differ in overall job satisfaction from those working in nonhospital laboratories or other fields? A one-way ANOVA compared the mean total job satisfaction scores of former medical technologists, practicing technologists employed in hospitals, and practicing technologists working in nonhospital laboratories. Tukey's test analyzed group differences.

Total job satisfaction scores were related to work setting (Table 9). Former medical technologists were more satisfied with their jobs than either group of practicing technologists. Practicing technologists did not differ in overall job satisfaction. The investigator will discuss these findings below with results for Question 6.

Question 6: Do medical technologists working in hospital laboratories differ in specific aspects of job satisfaction from those working in nonhospital laboratories or other fields? A series of one-way ANOVAs between the subscales of the JDI and work setting determined that the groups differed significantly on the work, pay, promotion, and co-worker scales of the JDI (Table 9). Tukey's test indicated that former medical technologists were more satisfied than practicing technologists with work, pay, and promotions. Tukey's test did not reveal differences between the groups on the co-worker scale. Hospital and nonhospital technologists did not differ on any scale.

Showery (1976) reported that employees in private laboratories, as a whole, were less dissatisfied with their jobs than those in hospitals. He hypothesized that private laboratories were better places to work

Table 9. Analysis of variance results for technologists on JDI by work environment.

Total JDI Scores					
Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	2	65,308.90	32,654.45	26.08	.0001*
Within Groups	108	13,217.33	1,252.01		

$\bar{x}$	Group
143.66	(1) Hospital technologists
153.42	(2) Nonhospital technologists
208.84*	(3) Former technologists

(3 is different from 1 and 2)

Work Subscale of JDI					
Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	2	2,474.13	1,237.06	15.18	.0001*
Within Groups	108	8,800.14	81.48		

$\bar{x}$	Group
28.28	(1) Hospital technologists
32.83	(2) Nonhospital technologists
40.84	(3) Former technologists

(3 is different from 1 and 2)

Supervision Subscale of JDI					
Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	2	810.95	405.47	2.99	.06
Within Groups	108	14,658.08	135.72		

$\bar{x}$	Group
40.75	(2) Nonhospital technologists
42.90	(1) Hospital technologists
49.58	(3) Former technologists

Pay Subscale of JDI					
Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	2	4,973.18	2,486.59	13.75	.0001*
Within Groups	108	19,526.41	180.80		

$\bar{x}$,	Group
21.50	(2) Nonhospital technologists
21.61	(1) Hospital technologists
39.37	(3) Former technologists

(3 is different from 1 and 2)

Table 9 (continued)

Promotion Subscale of JDI					
Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	2	6,814.72	3,407.36	23.59	.0001*
Within Groups	108	15,597.39	144.42		

$\bar{x}$	Group
8.90	(1) Hospital technologists
10.17	(2) Nonhospital technologists
29.84	(3) Former technologists

(3 is different from 1 and 2)

Co-worker Subscale of JDI					
Source	df	Sum of squares	Mean square	F ratio	F prob.
Between Groups	2	946.60	473.30	3.55	.03
Within Groups	108	14,394.38	133.28		

$\bar{x}$	Group
42.33	(1) Hospital technologists
48.17	(2) Nonhospital technologists
49.21	(3) Former technologists

*p<.05

because technologists seldom dealt with many critically ill patients, had fewer sources of aggravation, had a slower pace of activity, and were paid slightly higher salaries.

Breslau, Novack, and Wolf (1978) compared the job satisfaction of primary care physicians and paramedical personnel in large medical centers to those in traditional, small office practices. Personnel working in large medical centers were less satisfied with the work, co-workers, and pay than those in traditional practices. The researchers attributed these differences in satisfaction to differences in autonomy experienced by each group in their respective work environment. Personnel working in large, bureaucratic organizations contend with a variety of rules, regulations, and political considerations. Small practice personnel are not constrained by

as many of these factors and, therefore, experience more autonomy in their work setting.

Results of this study did not indicate differences in job satisfaction between hospital or nonhospital technologists. Numerous studies have shown that technologists are dissatisfied with their jobs. Work environment does not appear to transcend these dissatisfactions.

Broski and Cook (1978) and Broski et al. (1982) compared the job satisfaction scores of medical technologists on the JDI with scores of other health professionals. Medical technologists were less satisfied than dietitians, physical therapists, and occupational therapists on the work, pay, promotion, and co-worker subscales of the Index.

Broski and his co-workers also compared job satisfaction scores for each group of subjects with national norms established by Smith et al. (1969). Smith et al. based the norms for the JDI on a sample of 2000 male and 600 female workers in numerous occupations and communities throughout the United States. They also stratified these norms on the basis of education, income, community prosperity, and length of job tenure. Because norms for females stopped at 9 years of education, Broski et al. (1982) used norms established for males with 15 or more years of education. Although not ideal, these norms were the most appropriate standards for interpreting median subscale scores of the allied health professionals in the study.

Median scores of medical technologists were low in comparison to national norms. They ranked in the following percentiles for each subscale: work--20th, supervision--50th, co-workers--30th, promotion--25th, and pay--18th.

Median scores on each subscale of the JDI were calculated for practicing and former technologists in this study. Table 10 contains a comparison of these median scores with national norms based on male subjects with 15 or more years of education. With the exception of the supervision subscale, median scores for practicing technologists fell at or below the 55th percentile in comparison to the norm group. Former technologists scored at or above the 65th percentile on all but the work subscale. Compared to the technologists in Broski and Cook's (1978) study, practicing technologists scored lower on the work, promotion, and pay scales and higher on supervision and co-workers.

Question 7: Does a relationship exist between the sex of the participant and job satisfaction? The mean total job satisfaction score for males was 163.03 with a standard deviation of 46.51. Female subjects had a mean total score of 153.22 with a standard deviation of 41.19. Results of a t test indicated there were no significant differences between subjects' means ($t = 1.08$, t Prob. = .28).

Findings on the relationship between sex and job satisfaction have been inconsistent (Gruneberg, 1979). When other variables were

Table 10. Normative comparisons of technologists' median scores on the JDI subscales.

JDI subscale	Practicing technologists Median	Practicing technologists Percentile	Former technologists Median	Former technologists Percentile
Work	28	10	42	40
Supervision	48	65	54	99
Pay	21	15	42	65
Promotion	6	15	32	65
Co-workers	48	55	51	75

controlled, no significant sex differences existed (Brief & Oliver, 1976). Smith et al. (1969) found that men and women ranked areas of job satisfaction in the same order--co-workers, supervision, work, pay, and promotion. Means and standard deviations for each group on each subscale were also comparable, although females were less satisfied than males on the promotion scale.

Most medical technologists are women. Studies of job satisfaction in other female-dominated professions showed no sex-related differences in satisfaction (Kuhn, 1981; Mulkerne, 1980). Results from this study are consistent with previous findings.

Question 8: Does a relationship exist between the sex of the participant and attrition or the intention to leave medical technology? Table 11 contains the chi-square analysis of the responses of males and females to item 10 on the demographic questionnaire. Responses of former technologists were combined with technologists who definitely intended to leave within a year to increase expected cell frequencies. Results indicate sex-related differences in attrition or intention to leave medical technology.

Irwin (1983) determined that 76.5% of the male respondents in her study planned to leave medical technology within 5 years as opposed to 54.1% of female subjects. Furthermore, two thirds of the respondents agreed,with the statement that medical technology was not a good profession for men to enter today, whereas 60% of those planning to leave and 89% of those planning to stay in the field disagreed with the same statement about women.

Past surveys of health related occupations in which women constituted a majority indicated that the major reasons cited for

Table 11. Comparison of males' and females' responses to Question 10: "How likely is it that you will actively look for a position in another field within the coming year?"

Group		Highly likely	Most likely	Not likely	Not certain	Total
Males	N	14	3	11	2	30
	%	12.61	2.70	9.91	1.80	27.03
Females	N	17	6	47	11	81
	%	15.32	5.41	42.34	9.91	72.97
Total	N	31	9	58	13	111
	%	27.93	8.11	52.25	11.71	100

$\chi^2 = 8.16$

df = 3

χ^2 Prob = .04

leaving a job and remaining unemployed were family related (Gleich & Routh, 1974; Karni & Husted, 1970). Recent studies indicate that women leave medical technology to enter other fields (Broski et al., 1982; Hajek & Blumberg, 1982).

Of the 30 male subjects in this study, 14 (46.7%) had left medical technology or intended to leave within a year. A total of 17 females (15.3%) intended to leave or no longer practiced medical technology. Several subjects added written comments on the survey. One of the concerns expressed was in regard to pay. Many commented they could not support a family on their earnings and depended on a working spouse to provide additional income. Poor pay may be a major determinant of attrition among male technologists.

Question 9: Can some combination of demographic variables, work behavior type, and job satisfaction predict attrition among medical technologists? The investigator used stepwise discriminant analysis to determine what variables, if any, could predict attrition or

intention to leave medical technology. The following independent variables were entered into the model: sex, time in profession, availability of career information, age, work behavior type, and JDI scores. Multiple stepwise discriminant analysis allows for an assessment of the influence of each variable relative to the others on the dependent variable and indicates how much each variable contributes to explaining the model.

Results of the analysis indicate that Producer and Energizer scores, years as a medical technologist, age, sex, and scores on the promotion subscale of the JDI are useful in predicting attrition (Table 12). Producer scores explained 13% of the variance in the model. Age explained 6.3% and sex explained 3.9%. Length of service contributed 2.7% and promotion scores contributed 2.3%. Energizer scores explained 2.2% of the variance. Overall, the model explained 30.4% of the variance in attrition or intention to leave medical technology.

As discussed in the literature review, researchers have proposed a variety of models to explain the turnover process. These models assessed the influence of personal, job, attitudinal, and behavioral characteristics on turnover. Although the details of the models differ, all point to turnover as a function of negative job attitudes, personal characteristics, and an ability to find employment elsewhere. Past models, however, did not view turnover in terms of lack of fit between the individual and the job. The model proposed in this study integrated features of earlier models and extended them to include work behavior type as a personal variable.

Table 12. Summary table for stepwise discriminant analysis to predict attrition or intention to leave medical technology.

Step	Variable entered	Partial R^2	F	Prob F
1	Producer score	.130	16.34	.0001
2	Years in profession	.027	2.99	.09
3	Age	.063	7.18	.01
4	Sex	.039	4.25	.04
5	Energizer score	.022	2.41	.12
6	Promotion score	.023	2.45	.12

The significant predictor variables obtained in this study are consistent with some of those previously reported by researchers for other groups of workers. Age and length of service are usually negatively correlated to turnover (Mobley et al., 1979; Steers, 1977). In this study 85.7% of the technologists who intended to leave medical technology and 70.4% of the stayers were under 35 years old. Of the technologists intending to leave, 57.1% had more than 10 years of experience as medical technologists compared to 33.8% of those intending to stay in the field.

Chapter Summary

This chapter contained results of the following statistical analyses to answer the research questions posed in Chapter III: One-way ANOVA, t test, chi-square, and multiple stepwise discriminant analysis. Frequencies and means were also determined for responses to demographic items.

Medical technologists were predominately Producers and Concentrators. Results indicated that work behavior type was related to total job

satisfaction and to specific aspects of job satisfaction. Expected frequencies were less than five in 20% of the cells in the chi-square analysis to determine the relationship between work behavior type and attrition. The investigator could draw no definite conclusions. Former medical technologists differed from practicing technologists in hospital and nonhospital laboratories in total job satisfaction, work, pay, promotions, and co-workers. The participant's sex did not play a significant role in job satisfaction but did affect attrition or intention to leave. Attrition may be predicted from a set of variables including Producer and Energizer scores, years as a medical technologist, age, sex, and scores on the promotion subscale of the Index.

CHAPTER V
SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Problem and Procedures

Job dissatisfaction and attrition are major concerns in medical technology. In the interest of providing new insights into these problems, the investigator examined the relationship among work behavior types, job satisfaction, and attrition among a selected group of Florida medical technologists. The information generated by this study could be used for counseling and matching the right person to the right job.

Specifically, the study sought answers to the following questions:

1. What are the work behavior types of medical technologists?
2. Does a relationship exist between the work behavior type of the technologist and overall job satisfaction?
3. Does a relationship exist between work behavior type and specific aspects of job satisfaction?
4. Do participants' work behavior types relate to attrition or the intention to leave medical technology?
5. Do medical technologists working in hospital laboratories differ from those working in nonhospital laboratories or other fields in overall job satisfaction?
6. Do medical technologists working in hospital laboratories differ in specific aspects of job satisfaction from those working in nonhospital laboratories or other fields?
7. Does a significant relationship exist between the sex of the participant and job satisfaction?
8. Does a significant relationship exist between the sex of the participant and attrition or the intention to leave medical technology?

9. Can some combination of demographic variables, work behavior type and job satisfaction predict attrition among medical technologists?

The Job Descriptive Index measured overall job satisfaction and specific aspects of it: work, pay, promotion, co-workers, and supervision. The Marcus Paul Placement Profile indicated work behavior type. A demographic questionnaire provided career information and personal data about participants.

The investigator distributed 183 questionnaires to hospital and nonhospital laboratories employing baccalaureate-level technologists and to former medical technologists currently employed in a variety of occupations. Of these, 92 (60%) of the practicing technologists and 19 (66%) of the former technologists participated in the study.

Data from the demographic questionnaire indicated that the majority of subjects were females (78.3%) who had worked as technologists more than 5 years. About one third expected to leave medical technology and 22.8% expected to do so within the coming year. The majority of technologists had not received adequate career information prior to choosing medical technology as a career and almost three fourths indicated that information about work behavior types would have been helpful in making career decisions.

Former technologists worked in a variety of health related occupations. The majority had been out of medical technology less than 5 years and would not return.

Both groups felt that medical technologists lacked opportunities for career advancement, received inadequate pay, had little status in the medical community, and worked under stressful, boring conditions.

Medical technologists were predominantly Producers and Concentrators. There were higher proportions of these types among practicing technologists compared to the general population. Proportions of work behavior types among former technologists approximated those of the general population. The subtypes of practicing medical technologists also clustered into three major groups.

These findings are consistent with earlier research on personality types of medical technologists and correlations between personality type and work behavior type. Producers display work behavior traits required and desired in medical technology. The subtypes also reflect essential characteristics--precision, ability to follow directions, complete the work on time, and desire to produce quality work. Inducers and Energizers would find few opportunities, as bench technologists, to express most of their predominant work behavior characteristics.

Analysis of variance determined that a relationship existed between work behavior type and overall job satisfaction. Inducers were more satisfied than Producers. Inducers were also more satisfied with promotions than Concentrators and Producers. There were no other significant relationships between work behavior type and facets of job satisfaction. A chi-square test gave equivocable results for the relationship between work behavior type and attrition or intention to leave medical technology. Energizers and Inducers appear to leave at higher rates than Producers and Concentrators.

Analysis of variance also determined that former medical technologists are more satisfied with their jobs, work, pay, promotions, and co-workers than practicing technologists in hospital or

nonhospital laboratories. There were no differences in overall job satisfaction or specific aspects of job satisfaction between groups of practicing technologists.

In comparison to national norms established for the JDI, medical technologists scored in the 55th percentile or lower on all subscales except supervision. Former medical technologists scored at the 65th percentile or higher on all but the work subscale. Results were comparable to earlier studies on job satisfaction among medical technologists.

The sex of the participant did not affect job satisfaction. However, sex was related to attrition or intention to leave medical technology. Males appear to leave at a higher rate than females and may relate to the poor pay received by technologists compared to other professionals with comparable education.

Multiple stepwise discriminant analysis determined that attrition or intention to leave medical technology could be predicted from a model including Producer and Energizer scores, years of service as a medical technologist, age, sex, and promotion scores on the JDI. The model explained 30.4% of the variance in attrition or intention to leave the field.

Conclusions

Job dissatisfaction is costly to individuals and organizations. High turnover rates and poor morale are often the consequences. The personalities and work behavior types of the individual may play an important role in achieving success and adapting to a particular job or work environment. Therefore, to maximize effectiveness and job

satisfaction and minimize attrition, workers should be placed in jobs or roles consistent with their needs for structure, supervision, recognition, contacts with other people, and autonomy.

Results of this study indicate that work behavior type may play a role in job satisfaction and attrition. Practicing medical technologists are less satisfied with their jobs than technologists who have moved on to other occupations. These jobs afford former technologists with more opportunities for promotion, higher pay, satisfying work, agreeable co-workers, and may also be more consistent with their work behavior traits. Although sex did not affect job satisfaction, more males seemed to leave medical technology. Attrition from medical technology can be predicted, to some degree, from a combination of age, years as a medical technologist, sex, Producer, Energizer, and Promotion scores.

Implications

These findings have implications for counseling students planning to enter medical technology. Counselors could encourage Energizers and Inducers who select this field to prepare for administrative and educational roles. These aspects of medical technology would maximize opportunities for Energizers and Inducers to perform jobs consistent with their work behavior characteristics. Other types of students could also make wiser career decisions about selecting medical technology.

In the work setting, supervisors and managers could make valuable use of knowledge about their work behavior types as well as the types of their subordinates when assigning tasks or projects. In the laboratory, for example, Inducers would probably enjoy working on the phlebotomy team, working with student technologists, and organizing or

leading special committees. Energizers might be effective in trouble shooting instrument malfunctions or other problems and would probably enjoy testing new procedures or equipment. Concentrators would probably dislike the "Stat" laboratory. They would be frustrated by constant interruptions and unanticipated job tasks. The large volume of work that must be completed quickly and accurately would also dissatisfy them. Producers would be most comfortable performing the routine tasks in the laboratory.

Teaching and training techniques should also differ for the various work behavior types. Producers require structure, organization, and step-by-step instructions. Inducers would prefer instructional and training strategies that would permit group interaction.

Different management styles may be more effective with some work behavior types than others. A participatory management style might be effective with Inducers and Energizers but frustrating for the Producer who wants things spelled out clearly.

There are broader implications for curriculum developers to restructure the training of medical technologists to be more consistent with the roles they actually perform. Hospital administrators and pathologists should be more aware of the capabilities of the technologist and only hire them to work in jobs that lower level personnel could not perform as effectively. The advent of cost containment policies will help to ensure that recruiters will not "overhire" for jobs.

Broad implications for management include a review of current practices that tend to ignore the individual worker. Technologists want potential for advancement, a chance to use and develop their

abilities, and a challenging job. Taking these factors into consideration, management could implement counter-attrition strategies to retain valuable technologists.

Recommendations

This investigator examined attrition among medical technologists in terms of work behavior type, demographic variables, and job satisfaction. Research indicates that other factors may play a more important role in predicting attrition. Further areas of research could include testing a more comprehensive model of attrition.

A longitudinal study of attrition among medical technologists would provide more accurate predictors for those who leave this field than the present study. Attrition was indirectly measured as a function of intention to leave.

The JDI may not adequately distinguish among the work behavior types' satisfaction levels. Negative items on the JDI may have positive values for some work behavior types. The study might be repeated using other measures of job satisfaction.

Future studies might include teaching, administrative, and supervisory technologists to determine work behavior types and job satisfaction among them. Are there more Energizers and Inducers among these technologists and are they more satisfied in their roles than Energizers and Inducers at the bench?

An experimental study could be designed to examine the relationship of early intervention techniques with students planning to enter medical technology to future attrition. Intervention techniques could include earlier exposure to the work environment,

work behavior type assessment, exploration of role expectations, and coping strategies for the problems commonly encountered by medical technologists in the work environment.

This study was confined to a limited geographic area. Future studies could include technologists throughout the state.

The MPPP could be used in conjunction with McCormick's (1976) task analysis inventories to match work behavior types to jobs or occupations.

In conclusion, turnover is complex and multifaceted. No simple solutions exist to reduce the incidence of this problem among medical technologists. Knowledge of work behavior types may contribute to improving the match between those aspiring to be medical technologists and the work of medical technology.

APPENDIX A
LETTER TO CHIEF MEDICAL TECHNOLOGIST

CENTER FOR ALLIED HEALTH INSTRUCTIONAL PERSONNEL
Norman Hall
University of Florida
Gainesville, Florida 32611
(904) 392-2391

November 16, 1983

Dear Chief Medical Technologist:

Your staff has been selected to participate in a study of job satisfaction and attrition among bench-level medical technologists in the state of Florida. This project is under the direction of Dr. Margaret Morgan, director of the Center of Allied Health Instructional Personnel, and professor of Instructional Leadership and Support, University of Florida.

The objectives of the study are to:

1. Identify the work behavior types of practicing and former medical technologists.
2. Determine if work behavior type is related to job satisfaction and attrition.
3. Determine if (a)work environment (hospital compared to nonhospital laboratories or other fields) and (b)sex of the participant are related to job satisfaction.
4. Formulate implications for career planning and academic advising of students selecting the medical technology curriculum.
5. Improve the selection of students into medical technology programs and the placement of technologists into jobs.

I would like to come to your laboratory, at a time convenient to you, to deliver packets of instruments for the technologists under your supervision to complete. These instruments include a questionnaire to obtain background information about the participants, the Job Descriptive Index designed to measure job satisfaction, and the Marcus Paul Placement Profile that indicates work behavior type. All instruments will require less than 20 minutes to complete.

Your participation in this study is very important. All results will be kept in confidence. I will contact you by phone to make the necessary arrangements.

Very truly yours,

Sybil Wellstood
Microbiologist, VA Medical Center

APPENDIX B
INSTRUMENTS

JOB DESCRIPTIVE INDEX

Instructions

Words to describe particular aspects of any job (work, supervision, pay, promotions, and co-workers) are listed. Place a Y for Yes beside items that describe your job. Place an N for No if the item does not describe your job. If you cannot decide if the item is applicable, place a ? beside it.

WORK

____ Fascinating
____ Routine
____ Satisfying
____ Boring
____ Good
____ Creative
____ Respected
____ Hot
____ Pleasant
____ Useful
____ Tiresome
____ Healthful
____ Challenging
____ On your feet
____ Frustrating
____ Simple
____ Endless
____ Gives a sense of accomplishment

SUPERVISION

____ Asks my advice
____ Hard to please
____ Impolite
____ Praises good work
____ Tactful
____ Influential
____ Up-to-date
____ Doesn't supervise enough
____ Quick tempered
____ Tells me where I stand
____ Annoying
____ Stubborn
____ Knows job well
____ Bad
____ Intelligent
____ Leaves me on my own
____ Lazy
____ Around when needed

PAY

____ Income adequate for normal expenses
____ Satisfactory profit sharing
____ Barely live on income
____ Bad
____ Income provides luxuries
____ Insecure
____ Less than I deserve
____ Highly paid
____ Underpaid

PROMOTIONS

____ Good opportunity for advancement
____ Opportunity somewhat limited
____ Promotion on ability
____ Dead-end job
____ Good chance for promotion
____ Infrequent promotions
____ Regular promotions
____ Fairly good chance for promotion
____ Unfair promotion policy

CO-WORKERS

____ Stimulating
____ Boring
____ Slow
____ Ambitious
____ Stupid
____ Responsible
____ Fast
____ Intelligent
____ Easy to make enemies
____ Talk too much
____ Smart
____ Lazy
____ Unpleasant
____ No privacy
____ Active
____ Narrow interests
____ Loyal
____ Hard to meet

QUESTIONNAIRE FOR PRACTICING TECHNOLOGISTS

Please circle the appropriate response on the answer sheet unless otherwise instructed. Answer all questions.

1. What is your sex?
   a) Male b) Female

2. What is the highest level of education you have attained?
   a) Baccalaureate degree
   b) Masters degree
   c) Doctorate
   d) Professional degree (M.D., D.D.S.)

3. In what type of setting do you work?
   a) Hospital clinical laboratory
   b) Private laboratory
   c) Public helath laboratory
   d)Research laboratory
   e)Clinic
   f)Other (please specify in space provided)

4. If you work in a hospital laboratory, how many beds does it have?
   a)Fewer than 200
   b)200-400
   c) more than 400
   d) does not apply

5. If you work in a hospital laboratory, is it a teaching hospital?
   a) Yes b)No c) Does not apply

6. How long have you worked in your current job?
   a) Less than 1 year
   b) Between 1 and 3 years
   c) Between 3 and 5 years
   d) Between 5 and 10 years
   e) More than 10 years

7. How long have you been a medical technologist?
   a) Less than 1 year
   b) Between 1 and 3 years
   c) Between 3 and 5 years
   d) Between 5 and 10 years
   e) More than 10 years

8. Which of the following statements reflects your feeling about your future in medical technology?
   a) Definitely will not leave.
   b) Proably will not leave.
   c) Uncertain.
   d) Probably will leave.
   e) Definitely will leave.

9. Given your age, education, experience, and present job market, how easy would it be for a medical technologist with your qualifications to find a job with another organization?
   a) Very easy.
   b) Fairly easy.
   c) Not easy at all.
   d) Not certain.

10. How likely is it that you will actively look for a position in another field within the next year?
    a) Highly likely.
    b) Most likely.
    c) Not likely.
    d) Not certain.

11. In general, has your career in medical technology measured up to your expectations about the profession?
    a) Has exceeded my expectations.
    b) Has met my expectations.
    c) Has somewhat met my expectations.
    d) Has not met my expectations.

12. Knowing what you now know about medical technology, would you choose medical technology again as a career?
    a) I would choose it again without hesitation.
    b) I would choose it again but not work as a "bench" technologist.
    c) I would probably not choose it again.
    d) I definately would not choose it again.

13. Which of the following factors were most influential in your choice of medical technology as a career? From the list of items, select the 5 most important factors; then rank those factors in the order of their importance, using "1" for the most important factor and "5" for the least important.

___ Job security
___ Job opportunities
___ Interest in science & medicine
___ Availability of an educational program
___ Desire to help sick people
___ Expected salary
___ Influence by family
___ Influence by friends
___ School guidance program
___ Prior work or volunteer experience in a lab.
___ Other (specify) _____
_____

14. Do you feel that you had adequate information about yourself (skills, personality traits, interests, values) and medical technology to make a knowledgeable career decision?
    a) More than adequate information.
    b) Adequate information.
    c) Some information but more would have been helpful.
    d) Very little information.

15. Do you feel you could have made a more intelligent decision about selecting medical technology as a career if information had been available to you about the characteristics of your work behavior and those of satisfied medical technologists?
    a) This information would have been very helpful.
    b) This information would probably have been helpful.
    c) This information would not have helped.
    d) I am not sure.

16. If you intend to leave medical technology in the near future, which of the following factors would be most influential in your decision to leave? From the list of items, select the 5 most important factors; then rank them in the order of their importance, using "1" for the most important factor and "5" for the least important.

____ Routine nature of work.
____ Supervisors I worked under.
____ Lack of career advancement in medical technology.
____ Lack of status and recognition of medical technologists by the public and other health care practitioners.
____ Job setting, work conditions.
____ Stressful nature of work.
____ Inadequate salary.
____ I was not an integral part of the health care team.
____ Returned to school to prepare for another profession.
____ Personal reasons unrelated to the work or perofession of medical technology.
____ I was overtrained for the job I was doing.

17. What is your age?

a) Under 25 years
b) 25-35
c) 36-45
d) 46-55
e) Over 55 years

SURVEY QUESTIONNAIRE FOR FORMER MEDICAL TECHNOLOGISTS

Please circle the appropriate response on the answer sheet unless otherwise instructed. Answer all questions.

1. What is your sex?
   a) Male
   b) Female

2. What is the highest level of education you have attained?
   a) Bacchalaureate degree
   b) Masters degree
   c) Doctorate
   d) Professional degree (M.D., D.D.S.)

3. In what type of setting were you last employed as a medical technologist?
   a) Hospital clinical laboratory
   b) Private laboratory
   c) Public health laboratory
   d) Research laboratory
   e) Clinic
   f) Other (please specify in space provided) _____

4. If you worked in a hospital laboratory, how many beds did it have?
   a) Fewer than 200
   b) 200 to 400
   c) more than 400
   d) does not apply

5. If you worked in a hospital laboratory was it a teaching hospital?
   a) Yes
   b) No
   c) Does not apply

6. In what capacity were you working as a medical technologist at the time of your last employment?
   a) Bench technologist
   b) Educator
   c) Section supervisor
   d) Laboratory manager
   e) Other (please specify) _____

7. How long were you a medical technologist (total years of practice in the profession)?
   a) Less than one year
   b) Between 1 and 3 years
   c) Between 3 and 5 years
   d) Between 5 and 10 years
   e) More than 10 years

8. How long has it been since you practiced as a medical technologist?
   a) Less than one year
   b) Between 1 and 3 years
   c) Between 3 and 5 years
   d) Between 5 and 10 years
   e) More than 10 years

9. Which of the following factors were most influential in your decision to leave medical technology? From the list of items, select the 5 most important factors; then rank them in the order of their importance, using "1" for the most important factor and "5" for the least important.

____ Routine nature of the work.
____ Supervisors I worked under.
____ Lack of career advancement in medical technology.
____ Lack of status and recognition of medical technologists by the public and other health care practitioners.
____ Job setting, working conditions.
____ Stressful nature of work.
____ Inadequate salary.
____ I was not an integral part of the health care team.
____ I returned to school to prepare for another profession.
____ Personal reasons unrelated to the work or profession of medical technology
____ I was overtrained for the job I was doing.

10. Would you return to work as a medical technologist?
    a) Yes
    b) No
    c) Not certain

11. Would you recommend medical technology as a career to someone else?
    a) Would strongly recommend.
    b) Would recommend with reservations.
    c) Would probably recommend it.
    d) Would strongly advise against it.

12. Which of the following factors were most influential in your choice of medical technology as a career? From the list of items, select the 5 most important factors; then rank those factors in the order of their importance, using "1" for the most important factor and "5" for the least important.

___ Job security
___ Job opportunities
___ Interest in science & medicine
___ Availability of an educational program
___ Desire to help sick people
___ Expected salary
___ Influence by family
___ Influence by friends
___ School guidance program
___ Prior work or volunteer experience in a lab.
___ Other (specify) _____

13. Do you feel that you had adequate information about yourself (skills, personality traits, interests, values.) and medical technology to make a knowledgeable career decision?
    a) More than adequate information.
    b) Adequate information.
    c) Some information but more would have been helpful.
    d) Very little information.

14. What is your age?
    a) Under 25 years
    b) 25-35
    c) 36-45
    d) 46-55
    e) Over 55 years

APPENDIX C
LETTER TO PRACTICING MEDICAL TECHNOLOGISTS

CENTER FOR ALLIED HEALTH INSTRUCTIONAL PERSONNEL
Norman Hall
University of Florida
Gainesville, Florida 32611
(904) 392-2391

November 22, 1983

Dear Medical Technologist:

You have been selected to participate in a study of job satisfaction and attrition among bench level medical technologists in the State of Florida. This project is under the direction of Dr. Margaret Morgan, director of the Center of Allied Health Instructional Personnel, and professor of Instructional Leadership and Support, University of Florida.

The objectives of the study are to:

1. Identify the work behavior types of practicing and former medical technologists.
2. Determine if work behavior type is related to job satisfaction and attrition.
3. Determine if (a)work environment (hospital compared to nonhospital laboratories or other fields) and (b)sex of the participant are related to job satisfaction.
4. Formulate implications for career planning and academic advising of students selecting the medical technology curriculum.
5. Improve the selection of students into medical technology programs and the placement of technologists into jobs.

The study includes a questionnaire to obtain information about you and your career as a medical technologist, the Job Descriptive Index designed to measure your job satisfaction, an the Marcus Paul Placement Profile (MPPP) that provides some indication of your work behavior type. You will be able to complete these instruments in about 20 minutes.

Your participation in this study is very important. You will provide valuable information that can improve the match between people selecting medical technology as a career and the job of the medical technologist.

Please answer all questions as honestly as you can. Responses will be kept in confidence. Results will be reported statistically so that individuals or institutions will not be identified.

Return the completed instruments to me in the addressed, stamped envelope by December 6, 1983. If you would like a computer analysis and explanation of your particular work behavior type, put you name on the MPPP and I will mail you a copy of your results.

Very truly yours,

Sybil Wellstood

Sybil Wellstood
Microbiologist, VA Med. Ctr., Gainesville

APPENDIX D
LETTER TO FORMER MEDICAL TECHNOLOGISTS

CENTER FOR ALLIED HEALTH INSTRUCTIONAL PERSONNEL
Norman Hall
University of Florida
Gainesville, Florida 32611
(904) 392-2391

December 6, 1983

Dear Former Medical Technologist:

You have been selected to participate in a study of job satisfaction and attrition among medical technologists in the State of Florida. As a former medical technologist, you have valuable insights into medical technology that may be useful to others considering a career in this field.

This study is under the direction of Dr. Margaret Morgan, director of the Center of Allied Health Instructional Personnel, University of Florida. The objectives are to:

1. Identify the work behavior types of practicing and former medical technologists.
2. Determine if work behavior type is related to job satisfaction and attrition.
3. Determine if (a)work environment (hospital compared to nonhospital laboratories or other fields) and (b)sex of the participant are related to job satisfaction.
4. Formulate implications for career planning and academic advising of students selecting the medical technology curriculum.
5. Improve the selection of students into medical technology programs and the placement of technologists into jobs.

This study includes a questionnaire to obtain information about you, your former career as a medical technologist, and your present career. The Job Descriptive Index will measure job satisfaction in your present career and the Marcus Paul Placement Profile (MPPP) will be a means of identifying your work behavior type. You will be able to complete these instruments in about 20 minutes.

Your participation in this study is important. Please answer all questions as honestly as you can. All responses will be kept in confidence. Results will be reported statistically so that individuals or institutions will not be identified.

Return the completed instruments to me in the addressed, stamped envelope by December 15,1983. If you would like a computer analysis and explanation of your particular work behavior type, put your name on the MPPP and I will mail you a copy of your results.

Very truly yours,

Sybil Wellstood

Sybil Wellstood
Microbiologist,
VA Medical Center, Gainesville

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BIOGRAPHICAL SKETCH

Sybil Auriel Wellstood was born and grew up in New York City. She attended the city's public schools and graduated from Brooklyn College (City University of New York) with a Bachelor of Science degree in biology.

After graduation she worked as a microbiologist at the Connecticut State Department of Health and, later, as a junior bacteriologist at Coney Island Hospital, Brooklyn.

In 1970 she moved to Florida and attended graduate school at the University of South Florida. As a teaching assistant, she taught courses in basic and advanced microbiology. In 1973 she received the Master of Arts degree in microbiology.

From 1973 to 1976 she worked as a microbiologist at the University of Florida. Since 1976 she has been a microbiologist at the VA Medical Center, Gainesville, where she heads the clinical microbiology section of Laboratory Services. In that capacity she assumes a variety of supervisory, administrative, technical, teaching, and advisory functions. She is a clinical faculty member of the Department of Medical Technology, University of Florida.

She has published several articles in professional journals and received second prize in the 1982 Medical Laboratory Observer Essay Contest. She is a member of the American Society for Microbiology and Phi Sigma, a biology honor society. She also serves on the Clinical Executive Board of the Association of VA Clinical Microbiologists.

She entered the doctoral program in 1980. Her interest in job satisfaction and attrition among medical technologists stemmed from her experiences and frustrations as a supervisor dealing with these problems in the laboratory.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Margaret Morgan

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and Support

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Division of Curriculum and Instruction in the College of Education and to the Graduate School, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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